THE LANCET

Offices: 7, ADAM STREET, ADELPHI, W.C.2.

Telegrams: LANCET, WESTRAND, LONDON. Telephone: TEMPLE BAR 7228 and 7229.

No. VII. OF VOL. II., 1930. LONDON, SATURDAY, AUGUST 16, 1930 Pp. 112—Price 1s.

No. 5581. Vol. CCXIX. Founded 1823. PUBLISHED WEEKLY. Registered as a Newspaper. Annual Subscription Inland £2 2s. Abroad £2 10s.

OXFORD MEDICAL PUBLICATIONS.

SEE PAGE 3.

THE AUTONOMIC NERVOUS SYSTEM.

By ALBERT KUNTZ, Ph.D., M.D.,
Professor of Anatomy in St. Louis University School of Medicine.
Size 9½ × 6. Pp. xii + 576. With 70 Illustrations.
Price 31s. 6d.; postage 9d., abroad 1s. 4d.
Baillière, Tindall & Cox, 7 & 8, Henrietta-street, London, W.C.2.

CANCER OF THE RECTUM.
ITS PATHOLOGY, SYMPTOMATOLOGY AND TREATMENT.

BY W. ERNEST MILES, F.R.C.S.,
Surgeon Emeritus (with beds) to the Cancer Hospital; Surgeon to the Gordon Hospital for Diseases of the Rectum, &c.
80 pp. and 33 plates, bound cloth. 7s. 6d. net, post free 7s. 10d.
"It is the best exposition of the subject with which we are acquainted."—BRITISH JOURNAL OF SURGERY.
"Deserves to rank as a classic in the literature dealing with cancer of the rectum."—BULLETIN THE JOHNS HOPKINS HOSP.
"Perhaps no surgeon of to-day has had a greater experience in treating cancer of the rectum."—SURGERY, GYNECOLOGY, AND OBSTETRICS.
Harrison & Sons Ltd., 44, St. Martin's-lane, London, W.C.2.

BY LIEUT.-COL. ROBERT HENRY ELLIOT.
M.D., B.S. Lond., F.R.C.S. Eng., I.M.S., retd.
A TREATISE ON GLAUCOMA.
2nd Edition, Revised and Enlarged. 30s. net.

TROPICAL OPHTHALMOLOGY.
With 7 Plates and 117 Illustrations. 31s. 6d. net.
Spanish and French Editions, 1922. Full German Abstract.

THE CARE OF EYE CASES: 12s. 6d. net.
A MANUAL FOR NURSES, PRACTITIONERS, AND STUDENTS.
Chinese Edition. Oxford University Press.

GLAUCOMA 4s. net.
A HANDBOOK FOR THE GENERAL PRACTITIONER.

THE INDIAN OPERATION OF COUCHING FOR CATARACT.
7s. 6d. net. H. K. Lewis and Co. Ltd.

DISEASES OF THE RECTUM AND COLON
AND THEIR SURGICAL TREATMENT.
BY
J. P. LOCKHART-MUMMERY,
F.R.C.S.ENG., M.A., M.B., B.C.CANTAB.,
Senior Surgeon to St. Mark's Hospital.
Over Two Hundred Plates and Illustrations. Price 25s.

Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

NEW PRICE
and
NEW EDITION
TAYLOR'S MEDICINE
Fourteenth Edition by E. P. POULTON, M.D., F.R.C.P., and C. P. SYMONDS, M.D.; H. W. BARBER, M.B.; R. D. GILLESPIE, M.D.,
64 Plates, 103 Text-figures.
TWENTY-FIVE SHILLINGS.
London: J. & A. Churchill, 40, Gloucester-pl., Portman-sq., W.1.

Pp. x.+80. Crown 8vo. 6/- net; postage 3d.
THE TREATMENT OF
RHEUMATOID ARTHRITIS
By A. H. DOUTHWAITE, M.D., F.R.C.P.,
Assistant Physician to Guy's Hospital.

"... an interesting and useful book ... essentially practical." —LANCET.
"... well-written book ... remarkable for its up-to-date summary of knowledge."—THE PRACTITIONER.
London: H. K. Lewis & Co. Ltd., 136 Gower-street, W.C.1.

THIRD EDITION, With many Illustrations. 12s. 6d. net.
TREATMENT OF DISEASES OF THE SKIN.
By KNOWSLEY SIBLEY, M.A., M.D., B Ch.(Camb.).
London: Edward Arnold & Co., 41 and 43, Maddox Street, W.1.

THE THOMAS SPLINT AND ITS MODIFICATIONS IN THE TREATMENT OF FRACTURES.
By MEURICE SINCLAIR, C.M.G., M.B., CH.B.(EDIN.).
Pp. 152. 85 Illus., with X-Ray Photographs, 3 Charts. 15s. net.
Oxford University Press, Amen House, London, E.C.4.

BY KENNETH M. WALKER, F.R.C.S.,
M.A., M.B., B.C.
DISEASES OF THE MALE ORGANS OF GENERATION.
Pp. 246. Coloured Plate and 78 Illustrations. 12s. 6d. net.
THE ENLARGED PROSTATE.
Pp. 212. Coloured Plate and 59 Illustrations. 12s. 6d. net.
MALE DISORDERS OF SEX, 5s. net. (Jonathan Cape.)
Oxford University Press. Amen House, London, E.C.4.

183 Illustrations. 25s. Postage 9d.
STONE IN THE URINARY TRACT.
By H. P. WINSBURY WHITE, M.B., Ch.B., F.R.C.S.,
Assistant Surgeon, St. Paul's Hospital, London;
Hunterian Professor, Royal College of Surgeons, 1925.
"This book contains a vast amount of information."—
THE LANCET.
London: J. & A. Churchill, 40 Gloucester-place, Portman-sq., W.1

CANCER OF THE BREAST,
AND ITS TREATMENT.
By W. SAMPSON HANDLEY, M.S., M.D.Lond., F.R.C.S. Eng.
Second Revised Edition. With 82 Illustrations. 30s. net.
Published for the Middlesex Hosp. Press by John Murray, London.

TO ADVERTISERS

THE MANAGER WISHES TO ANNOUNCE THAT

THE STUDENTS' NUMBER OF THE LANCET

FOR THE MEDICAL SESSION 1930-1931
WILL BE ISSUED ON FRIDAY, AUGUST 29th.

Advertisements should be forwarded to the Office, 7, Adam Street, Adelphi, London, W.C.2

A Remarkable Achievement in Urography

'UROSELECTAN'

Contrast agent for the radiographic demonstration of the kidneys and urinary tract by intravenous injection.

Supplied in bottles of 40 grammes substance.
Full literature gladly on request.

SCHERING LIMITED, 3, Lloyd's Avenue, LONDON, E.C.3

ÉLIXIR BROMO-VALERIANATE GABAIL

Literature and Samples on request.

A therapeutically active combination of Deodorised Valerianate with Strontium Bromide.

The Ideal Sedative
in all
Nervous Affections

Dose :—One tablespoonful twice or thrice daily.
As a Hypnotic :—Two tablespoonfuls at bedtime.

THE ANGLO-FRENCH DRUG CO. LTD., 238a, Grays Inn Road, LONDON W.C 1.

ZŌPLA STRAPPING

"The Standard."

fulfils every function a good strapping should

1. Greatest tenacity of any. It grips.
2. A formula which offers the greatest possible provision against cases of irritation. Easily the best in this respect.
3. It is the best keeping plaster; further, the cloths used are of great strength, specially woven with the strongest yarns where wanted.

EACH SPOOL PACKED IN A TIN. SAMPLES ON REQUEST.

LESLIES LTD., High St., WALTHAMSTOW, LONDON, E.17.

If you have a difficult case of Hernia send your patient to be properly fitted with a

SALMON ODY BALL & SOCKET TRUSS

Perfect support. Perfect resiliency. Perfect freedom of movement. *The most scientific truss ever devised.*

Expert fitters always in attendance.

ESTAB. 120 YEARS

SALMON ODY LTD.

Highly recommended by the Medical Profession

7, NEW OXFORD STREET LONDON, W.C.1

Telephone - Holborn 3805

THE SALMON ODY SPIRAL SPRING ARCH SUPPORTS

The best Medical authorities are agreed that rigid plates are injurious and are prescribing these supports for foot troubles—tired, aching feet, weak insteps or rheumatic pains. 15/6 per pair. Metatarsal 18/6 per pair. State size of footwear when ordering.

THE LANCET

A JOURNAL OF BRITISH AND FOREIGN MEDICINE, SURGERY, OBSTETRICS, PHYSIOLOGY, CHEMISTRY, PHARMACOLOGY, PUBLIC HEALTH, AND NEWS.

No. 5581. LONDON, SATURDAY, AUGUST 16, 1930. CCXIX.

CONTENTS

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

ADDRESSES AND ORIGINAL ARTICLES.

Syphilis of the Heart and Great Vessels. By CAREY F. COOMBS, F.R.C.P.—III.—*(Illustrated)* 333
The Bi-coloured Guaiac Test for the Cerebro-spinal Fluid. By J. G. GREENFIELD, F.R.C.P., and RUBY O. STERN, M.B. 339
Ætiology of Cholecystitis. By BRYAN WILLIAMS, M.B., and D. G. S. MCLACHLAN, M.B. 342
Pyrogenetic Action of Sulphur in Olive Oil. By W. H. SHILVOCK, M.B. 347
Sulfosin Therapy in G.P.I. By W. G. PATTERSON, M.R.C.P.Lond., and S. R. L. SWITZER, M.R.C.S. 348

CLINICAL AND LABORATORY NOTES.

Pituitary Cachexia. By JANE W. STOCKS, M.B.—*(Illustrated)* 349
Expulsion of an Ectopic Foetus Papyraceus after Uterine Curettage. By KENNETH MCFADYEAN, M.R.C.S. 350
An Unusual Route of Infection in Cholecystitis. By R. RUTHERFORD, F.R.C.S.—*(Illustrated)* 351

REVIEWS AND NOTICES OF BOOKS.

Reins: Nouveau Traité de Medecine. By Prof. F. Widal, A. Lemierre, and P. Vallery-Radot 352
Œdema of Bright's Disease. By Prof. Ch. Achard. Translated by Maurice Marcus, M.B. 352
Hypertension and Nephritis. By A. M. Fishberg, M.D. 352
A System of Bacteriology in Relation to Medicine 353
Injuries to Joints. By Sir Robert Jones 353
Physiological Principles of Hydrology. By R. G. Gordon, F.R.C.P., and F. G. Thomson, F.R.C.P. 353
Radiologie clinique du tube digestif: œsophage, intestin, foie et glandes annexes. By Prof. J. Gatellier, F. Moutier, and P. Porcher 354
Development of Sex in Vertebrates. By F. W. R. Brambell 354
Die seelischen Heilmethoden des Arztes. By Dr. Max Levy-Suhl 354

LEADING ARTICLES

DRAINS 355
GALL-BLADDER DISEASE 356
MEDICAL RESEARCH IN INDIA 357

ANNOTATIONS.

International Congress of Dermatology and Syphilis 358
On Giving Advice to the Tuberculous 358
International League Against Trachoma 359
Milk-borne Epidemics 359
Legalisation of Eugenic Sterilisation 360
The Health of the Adult Worker 360
An Official Correction from the M.R.C. 361
Congress for Sex Research 361
Medical Insurance Agency 362
British Association for the Advancement of Science 362

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS.

LXXXI.—Clinical Significance of Slit-lamp Appearances. By C. GOULDEN, F.R.C.S.—I.—*(Illustrated)* 363

REPORTS AND ANALYSES.

Constantino's Quina-Port 354

SPECIAL ARTICLES.

Seasonal Variation in the Growth of School-children. By J. B. ORR, D.Sc., and M. L. CLARK, L.L.A.—*(Illustrated)* 365
Maternal Mortality and Morbidity—*(Concluded)* 367
Eugenic Sterilisation: Report by a Committee of Eugenics Society 369

PUBLIC HEALTH SERVICES.

Reports of Medical Officers of Health: Brighton.—Hastings.—Gt. Yarmouth.—Blackburn.—Stockport.—Bury 371
School Medical Service: Leeds.—Gillingham.—Eastbourne 373
Mental Hospital Reports 374
Infectious Disease in England and Wales 375

THE SERVICES

Royal Naval Medical Service.—Royal Army Medical Corps.—Royal Air Force.—Indian Medical Service.—Colonial Medical Services.—Deaths in the Services 375

CORRESPONDENCE.

Umbilical Hernia in Infants (Dr. Eric Pritchard) 376
Treatment of Pulmonary Tuberculosis in Switzerland (Dr. H. Stanley Banks) 376
The Dutch Pessary (Dr. E. Sloan Chesser) 377
A Memorial to Margaret Macdowall (Sir Robert Cockburn and others) 382

MEDICAL NEWS.

University of Cambridge 377
Belford Hospital 362
An X Ray Room for Harrow Hospital 370
A Middlesex Convalescent Home 372
Hospitals for the Scottish Isles 372
Manchester Babies' Hospital 372
St. Bartholomew's Hospital and College 377
Tour of Medical Italy 377
The late Mr. J. T. Ainslie Walker 377
North Staffordshire Royal Infirmary 377
Arundel Hospital 377
Royal Microscopical Society 377
Reunion of the Romance Medical Press 377
Enlargement of Carshalton Hospital 378
Coombe Lying-in Hospital 378
Donations and Bequests 378
Royal Northern Group of Hospitals 378
King Edward VII. Welsh National Memorial Association 378
A Friendly Society Congress 378
Adult Orthopædic Patients 378
Central Hospital for Durham 378
Sussex Provident Scheme 378
Fellowship of Medicine and Post-Graduate Medical Association 378
School Hygiene in Ireland 378
Extensions at Papworth Settlement 381
Roasting an Ox 382
Leeds Public Assistance Hospitals 382

NOTES, COMMENTS, AND ABSTRACTS.

The Australian Cancer Organisation. By ARTHUR BURROWS, M.R.C.P.—*(Concluded)* 380
The Nature of Milton's Blindness 381
Ulcers of the Skin 382
Tonsillectomy in Rheumatic Fever 382

INDEX NOTICE.

THE LANCET, Vol. I., 1930 379

Medical Diary 378
Appointments 379
Vacancies 379
Births, Marriages, Deaths. 379

H. K. LEWIS & CO. LTD., MEDICAL PUBLISHERS AND BOOKSELLERS

Text-Books and Works in Medical, Surgical, and General Science of all Publishers.

Orders by Post or Telephone promptly attended to. **Catalogues post free on Application.**

Estimates given for binding. **Sets of Periodicals bound to order.**

Special Stock of Medical Stationery, Loose Leaf Case Books, Card Index Systems, Case Sheets, Filing Cabinets, etc.

Prompt attention to orders and enquiries for Foreign Medical and Scientific Books. Department for SECOND-HAND BOOKS, 140, Gower Street.

MEDICAL AND SCIENTIFIC CIRCULATING LIBRARY

Annual Subscription, Town or Country, from One Guinea.

LIBRARY READING ROOM (first floor) OPEN DAILY TO SUBSCRIBERS. Hours 9 a.m. to 6 p.m. Saturdays to 1 p.m.

136, GOWER STREET, and 24, GOWER PLACE, LONDON, W.C. 1.

Telegrams: "PUBLICAVIT, EUSROAD, LONDON." Telephone: MUSEUM 7756 (3 lines.

STAMMERING, SPEECH DEFECTS

BEHNKE METHOD. Estab. 1882. CASES, non-resident, treated at 39, Earl's Court Square, S.W.5, and, in residence, in the Summer holidays at Miss Behnke's house on the Chilterns.

"Pre-eminent success in the education and treatment of stammering and other speech defects."—*The Times.*

"Thoroughly physiological principles."—*The Lancet.*

"The method is scientifically correct and perfectly effective."—*Guy's Hospital Gazette.*

"STAMMERING, CLEFT PALATE SPEECH, LISPING." 3s. 9d. of Miss BEHNKE, 39, Earl's Court Square, S.W.5.

BRONZE NAME PLATES
BRASS NAME PLATES

Cream enamelled lettering. No cleaning required.

Museum 2264. Send for list B6 to the Actual makers:—

F. Osborne & Co. Ltd., 27, Eastcastle St., London, W.1

DR. CHAUMIER'S REINFORCED VACCINE LYMPH

PREPARED IN ACCORDANCE WITH THE THERAPEUTIC SUBSTANCES REGULATIONS, 1927.

Supplied in tubes sufficient to vaccinate 1 person at 8d. each

Postage and packing 2d. each extra.

ROBERTS & CO.
Pharmacists to H.M. the King,
76, New Bond Street, London, W.1
Telephone: Mayfair 4173

SANTONIN

THE ONLY SPECIFIC ANTHELMINTIC.

No matter what systemic disease may be suspected, especially in children, the presence of helminths should not be overlooked in diagnosis.

"COMMON HELMINTHS IN MEDICAL PRACTICE"

This well-illustrated book summarises recent periodical literature which is not always readily accessible to medical practitioners.

Copies of this interesting book will be sent FREE on request.

ARCOS Ltd. (Santonin Dept.), Bush House, Aldwych, London, W.C.2

WHERE ARE YOU GOING FOR YOUR HOLIDAYS?

SUMMER TOURS TO MADEIRA or CANARY ISLANDS
At Reduced Return Fares.
MADEIRA—FIRST CLASS—£20
SECOND CLASS—£15
CANARY ISLES FIRST CLASS £20

CRUISES TO ANTWERP ROTTERDAM, HAMBURG and back.
Fortnightly from London
13-14 days
First Class Fare—£20

Branch Offices at Southampton, Birmingham, Leeds, Liverpool, Manchester and Glasgow.

UNION-CASTLE LINE

Full particulars from Head Office: 3, Fenchurch St., London, E.C.3.
West End Agency: 125, Pall Mall S.W.1

"STERULES"

(REGISTERED TRADE MARK)

FOR HYPODERMIC, INTRAMUSCULAR and INTRAVENOUS USE AND FOR INHALATION

The proprietary rights in the Trade Mark "Sterules" are rigidly guarded against infringement.

Complete Price List on request.

MARTINDALE'S AMYL NITRITE STERULES
for use in Angina Pectoris, threatened fainting and collapse, &c.

W. MARTINDALE (MANUFACTURING CHEMIST), 10, New Cavendish St., London, W.1.

Telegraphic Address: "MARTINDALE, CHEMIST, LONDON."
Telephone Nos.: LANGHAM 2440 and 2441.

ADDRESSES AND ORIGINAL ARTICLES

SYPHILIS OF THE HEART AND GREAT VESSELS.

By Carey F. Coombs, M.D., F.R.C.P. Lond.,
PHYSICIAN, AND IN CHARGE OF THE UNIVERSITY CENTRE OF CARDIAC RESEARCH, GENERAL HOSPITAL, BRISTOL.

LECTURE III.*

Changes in the Aorta.

The most constant and at the same time the most striking lesions seen histologically are those in the wall of the aorta. These are not always easily discriminated by the naked eye from those of atheroma with which in fact they are often mingled; yet histologically the two lesions are as different as possible. The syphilitic lesion is inflammatory while the other is degenerative; the one invades the media from the adventitia along the track of the vasa vasorum, while the other, beginning and centring in the intima, encroaches upon the adjacent part of the media. In one respect, indeed, they are alike, in that each is capable of breaking up the elastic fibres of the aortic wall, but even here there is a difference, for syphilis breaks into those fibres oftener and far more seriously than does atheroma. Syphilitic aortitis is a chronic inflammation (Fig. 5), marked histologically by mononuclear response (Fig. 6) which is seen scattered about in the peri-aortic connective tissue, and banked up in the adventitia, against the outer aspect of the media. Here the cells—lymphocytes, plasma cells, and some fibroblasts—collect round the vasa vasorum, and around them enter the media from without inwards. In the media spaces form between the fibres, which tend to spread along and around the vessel. These become filled partly with the inflammatory cells, partly with new blood-vessels, partly with new fibrous tissue. As these new elements spread they tend to become connected with one another and thus to break off the elastic fibres by which they are bounded. By this process of coalescence large spaces (Fig. 7) and long fissures are formed, gravely lowering the value of the aortic wall as an elastic and resilient structure. It is easy enough to see from the picture of any syphilitic aorta how aneurysms, both saccular and dissecting, are formed. Indeed it is wonderful that any syphilitic aorta fails to become aneurysmal. One change that tends to prevent this is the fibrous thickening of the intima that is formed, like a kind of dam, opposite the weaker places in the media (Fig. 8). This is so obvious that it is impossible not to regard the two phenomena, medial thinning and intimal thickening, as cause and effect. This thickened intima may subsequently undergo fatty change and calcareous infiltration, thus producing a kind of atheroma; yet a kind quite different from that seen in senile or decrescent arterial change which begins in the intima and leaves the adventitia untouched.

Fig. 5.

Low-power view of section through wall of syphilitic aorta.

Fig. 6.

Higher magnification of area marked A in Fig. 5, to show mononuclear infiltration with vascularisation in the media.

Some accounts of these lesions ascribe great importance to changes in the walls of the vasa vasorum, labelled endarteritis. I believe, however, that it is a fallacy to suppose that the characteristic change in the vasa vasorum is intimal. The reverse is true, for there is an intense cellular reaction around these vessels which follows them on their course into the media, a fact which shows quite clearly by what channels the virus of syphilis breaks through the aortic defences. Any change that can be marked in the walls of these small nutrient vessels surely arises from the outside. At all events, that change is as much medial as intimal and, though it may amount to complete occlusion of some vessels, could scarcely be held responsible for so gross an injury to a first-class tissue as is to be seen in the media of the syphilitic aorta.

Considered longitudinally, this process often fades into normal aorta within a short distance from the root of the vessel, which it usually encircles. It is on the sigmoid and suprasigmoid portions that the chief stress falls. At the cardiac end of the tube the process ends abruptly, not passing down into the ventricular walls as a rule. I found no example of spread in this direction. The wave spends itself and is checked. Yet in ending here the inflammatory process involves two structures of vital importance: the mouths of the coronary arteries and the aortic semilunar valves. This stenosis of the coronary mouths is a most striking pathological change, as striking both by reason of its individuality and of its consequences as, say, mitral stenosis. What is so remarkable is to see the inflammatory reaction leave off abruptly as the aorta passes over into coronary artery. The walls of the coronary arteries themselves are scarcely ever touched by this invasion. Nevertheless it comes right down the aortic wall to the very angle of the coronary opening (Fig. 9), and at this point the adventitia is intensely inflamed. It is easy to see how this leads to a fibrosis round the orifices of the coronary vessels

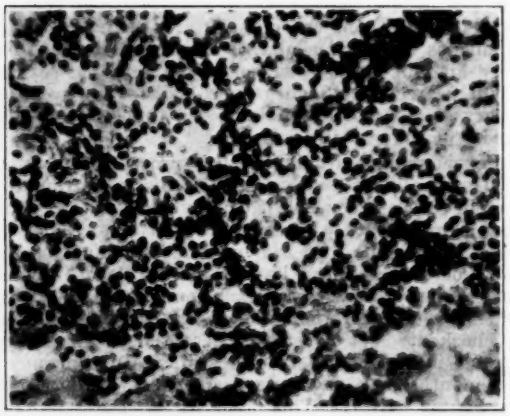
* The third Lumleian lecture. The previous two lectures appeared in The Lancet of August 2nd and 9th respectively.

by which these are nipped in an ever-tightening strangle-hold.

Scarcely less remarkable is the effect of this ring of inflammatory change on the aortic semilunar cusps. If the commissures between neighbouring cusps be examined, they are often seen to be swollen, and the swelling has spread into the adjacent portions of the cusps themselves. These are thereby stiffened and shortened, and thus tethered at their aortic attachments in such a way as to render them inadequate. With the microscope this swelling is seen to be partly inflammatory (Fig. 10), partly œdematous. Scott and Saphir[46] find that œdema precedes cellular infiltration. Whether this is so or not, both changes are seen, sometimes one, sometimes the other being predominant. The endothelium tends to proliferate and to be shed at this, the commissural, end of the valve cusps, which may thus become adherent to each other or to the aortic wall. From the frequency with which the cusps perforate at this part of their extent—the "reticulation" described and figured by Corrigan—it seems that this process involves them in a kind of dystrophy; or perhaps these accidents are wholly due to the tethering effect of the infiltration at the commissural margin of the cusp. Immediately beneath the swollen and inflamed commissure, which is a kind of cushion of subintimal connective tissue, the media usually exhibits the characteristic syphilitic reaction (Fig. 11).

So far, then, this is the picture: an inflammation reaching the aorta from without, invading and breaking up its middle coat, and spreading heartwards until it stops at the level of the sigmoid portion, where it strangles the coronary arteries and ties down the aortic semilunar cusps. This stricture of the coronary mouths (Figs. 12, 13) is all the more striking because the coronary arteries beyond are free from disease. That this is so is proved by section of the coronary trunks and branches, which have in all cases but one—

FIG. 7.



High-power magnification of area marked B in Fig. 1, to show the mononuclear character of the cellular infiltration seen in the periaortic lymphatics.

to be alluded to in a moment—proved free from infective arteritis. In several, it is true, an intimal swelling, with degeneration which tends to invade the media from within outwards, has been seen. This appears to me to be identical with the atheromatous change from which the coronary arteries of persons over 50 are seldom quite free. I do not think there can be any doubt that the coronary arteries themselves are very rarely attacked by syphilis, and this view is strikingly supported by some observations which Dr. Bruce Perry kindly undertook on my behalf. He injected into the coronary arteries of five hearts showing signs of syphilitic infection an opaque

FIG. 8.

Low-power view of section of aortic wall stained with orcein to show rupture of elastic fibres of media by the syphilitic process, with compensatory thickening of intima. A = adventitia. M = media. I = intima.

substance, after the method used by Gross, Campbell, and others; and by X raying these specimens was able to demonstrate the freedom of the coronary arteries and their branches from any stricture (Fig. 14). This freedom from interruption in the course of the vessel forms a striking contrast with the extreme stenosis of its mouth. An artery of which the openings from the aorta are so narrowed as to be almost invisible nevertheless opens up immediately afterwards into a tube with smooth walls and normal calibre. In senile or "decrescent" hearts, on the other hand, the bore of the coronary arteries varies greatly and exhibits may strictures. The pulmonary artery, examined by me in nine cases, showed some departure from the normal in four, the changes being similar to those in the aorta but much less pronounced.

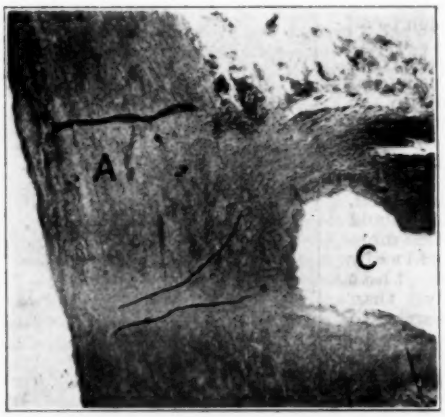
LESIONS IN THE MUSCULAR WALL OF THE HEART.

The muscle cells.—In most of the hearts examined some evidence of malnutrition of the myocardial cells was found. Usually this was mild in degree and scattered in distribution. For example, the auricular walls in three instances showed the same kind of fatty change that is seen in them in advanced cardiac rheumatism—similar in kind but by no means so severe in degree. In six cases the walls of the ventricles, in which it is usually more difficult to detect these degenerative phenomena than it is in the auricular walls, showed clear evidence of impaired nutrition in the form of fatty change, and even more definitely in a shrinkage of the total volume of the cells. In two hearts the fibres of the auriculo-ventricular bundle showed the same kind of change, but I did not see it in any sinu-auricular node. Once only did I find a gross focal lesion of the muscular tissue: a wedge of necrotic muscle, free from inflammatory reaction, in the upper part of the inter-ventricular septum (Fig. 15). Near this there were some lesions of arterioles.

The *connective tissue planes* of the cardiac wall undergo three kinds of alteration. The one most often seen is an increase of fibrous tissue that takes place with little or no inflammatory reaction. In the areas where this is seen the muscle-fibres are reduced in number and size, and it is therefore a "replacement"

fibrosis. In some degree it is present in most syphilitic hearts. The largest areas that I have seen were in a papillary muscle of the left ventricle, and in Dr. Herapath's case, already mentioned, where scar tissue and fat cells had almost entirely

FIG. 9.



Low-power view of section of aorta at origin of a coronary artery, showing adventitial and medial lesions of aorta. Note that these lesions, while sparing the coronary wall, are so situated as to constrict the coronary opening. A = aortic wall. C = lumen of coronary artery.

replaced the muscle-fibres of the auriculo-ventricular bundle. I examined the bundle in twelve cases but found no gross connective increase in any of them, nor in the sinu-auricular node, examined thirteen times. The absence of frank inflammatory change was a great surprise to me. Only in one heart did I see a granulomatous focus. This was very small and well out of the way in the subpericardial fat. In several thousand sections of cardiac muscle I did not once see a granuloma. When an ulcerative endocarditis was added to the syphilitic lesion, embolic foci were noted in the cardiac wall. This is the rule in warty endocarditis. The third kind of change is an interesting one. It has been described before and regarded as an inflammatory reaction to infection. The appearances are those of a weak cellular response—a few plasma cells and lymphocytes—drowned in serum, which gives the tissues a dropsical appearance (Fig. 15). It is difficult to think that the same infection which can excite so brisk a reply in the aortic wall should be able to provoke in the cardiac wall nothing better than this watery response. In over 100 hearts damaged by other infections nothing quite like it was seen.

We have been told by some observers that this is an inflammatory reaction excited by spirochætes lying latent in the cardiac wall, and as this is a point on which none but the most experienced observer can offer an opinion, I called on Prof. Levaditi last autumn at the Pasteur Institute. He was kind enough to undertake the examination of portions of two hearts in which we had already found aortitis and myocardial fibrosis on a generous scale. He reports as follows:—

"We have examined the blocks that you sent by the silver impregnation method, that up till now has given us the most reliable results. We have found it impossible to demonstrate spirochætes, in spite of the presence of aortitis. We shall continue to search, and will report if we find anything positive."

Coming from so experienced an authority this verdict has peculiar weight; it is at all events clear that if spirochætes are in the myocardium they are so few as to be very difficult to find.

Another surprise has been the freedom of the coronary twigs from inflammatory change. One finds, of course, medial hypertrophy in hearts that are themselves hypertrophied, and atheromatous change in subjects of the appropriate age. But only one heart has shown signs of an actual arteritis in these twigs, and in this instance both media and intima were involved, the limiting elastic lamina being disintegrated (Fig. 16). It was near to these arteriolar changes that the wedge of necrotic muscle was noted of which I spoke just now. My interpretation was that arterial disease in this area had ended in the formation of an infarct.

Blood-vessels.—I must here record what was to me the most significant and revealing of all the phenomena noticed in the cardiac wall. As I was making notes on changes seen in sections of the interventricular septum, something which I had never seen before in the cardiac wall struck me, and I wrote down "large venous sinuses immediately under the endocardium." These were obviously associated with muscular atrophy and fibrous increase (Fig. 17), as they ran through the centre of atrophic areas. On reflection it was borne in upon me that these were the dilated Thebesian veins that Wearn[62] has described and, as in his cases, they were associated with stenosis of the coronary openings. In hearts injected by Dr. Perry the injection mass did not seem to have penetrated these sinuses.

Rheumatism and Syphilis Contrasted.

We are now in a position to reply to the four questions that prompted this histological inquiry. These are arranged so that one reply may in some measure clear the ground for the next.

(1) The aortic valves are rendered liable to the implantation of secondary infections by a process that is radically different from that of the rheumatic infection. In rheumatism the infective agent enters the depths of the valve from the coronary stream, excites a reaction there which, so to speak, bursts the valve, or at all events floats off its endothelium, leaving a roughened and injured surface. In syphilis the process also begins in the depths of the valve, and causes it to swell, until here also the endothelium is injured and desquamates. The raw surface may become adherent to its neighbouring valve or to the aortic wall, or it may invite and receive a deposit of clot, with micro-organisms laying therein the foundations of an endocarditic vegetation. But the syphilitic injury is inflicted, not through the medium of the coronary blood-supply, but by lymph-borne virus

FIG. 10.

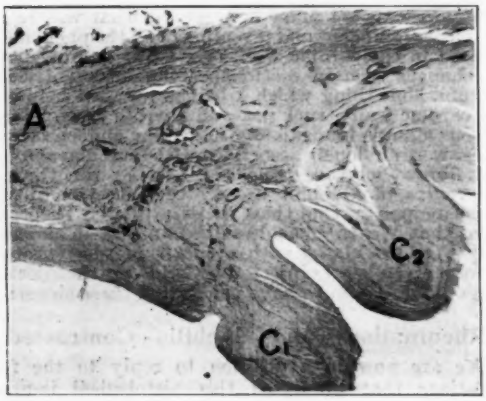
Commissure from which two cusps (C_1, C_2) of the aortic valve spring, showing early cellular infiltration. A = aortic wall.

which filters from the adventitia through the media till it is arrested at the valvular attachments and especially at the commissures (perhaps because it reaches these first). Here it causes an inflammation which interferes with the flow of lymph through the valvular tissue, rendering it both œdematous and fragile. As this process is limited to the commissures and adjacent parts of the cusps, it is interesting to note that here also—in the only early specimen I have seen—the

infection that provoked an ulcerative endocarditis seems to have been implanted.

(2) Lesions of the sinu-auricular node and the auriculo-ventricular bundle were not found. Such changes as have been seen in the cardiac wall are almost exclusively dystrophic; these are found in

FIG. 11.

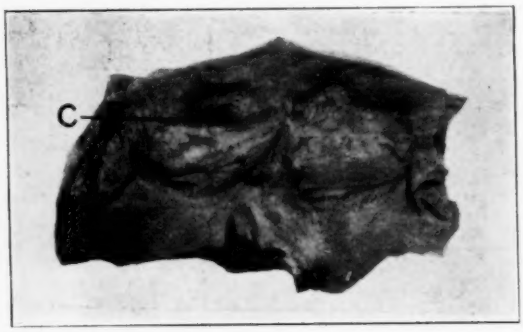


Another commissure showing vascularisation of the media concentrated at this point. A = aortic wall. C_1, C_2 = cusps of aortic valves, cut off short.

all cases, whereas definitely inflammatory foci were almost non-existent. Whatever else may be laid to the charge of the syphilitic spirochæte, it cannot be accused of remaining alive in the cardiac wall in such numbers as to provoke an obvious inflammatory response.

(3) The absence of cardiac infarction is easily explained. There is no disease in the coronary arteries and therefore no occasion for clotting within their lumen. This absence of gross coronary disease is a very striking fact, since it goes a long way to prove that the cardiac failure of late syphilis is not due to the transmission of the infection into the myocardium along coronary avenues. The frequency with which cardiac pain is experienced in cardiac syphilis is

FIG. 12.



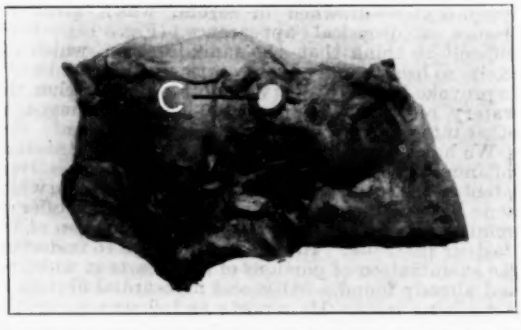
A coronary opening C much narrowed by aortic syphilis.

probably related to the obstruction of the coronary orifices. Perhaps it is also in part due to the periaortic inflammation, which may surround the nerve trunks, though without, as far as my observation goes, invading them; and it may be that this element is responsible for the fact that pain in cardiac syphilis may often occur apart from exertion or other obvious provocative. This periaortitis is a striking phenomenon, and one cannot be surprised at the impression that it made on the mind of Clifford Allbutt, who was so familiar with it. Yet cardiac pain occurs when there is no periaortitis, as in atheroma and hyperpiesis, and even when there is no gross change in the arterial tree, as in a few cases of pernicious anæmia. I can see nothing common to all these widely diverse conditions except a failure in the supply of oxygenated blood to the cells of the cardiac wall. Nothing could interfere more effectively with that supply than the barrier to coronary inflow which aortic syphilis imposes. The Harvey film of this College showed the beating heart paling in systole and flushing in diastole, flushing because its coronary arteries are filling with blood, as Anrep has taught, and passing that blood on to the rich capillary system with which the muscular wall of the heart is endowed. But if the coronary openings are so narrowed that blood cannot be drawn through by the ventricular relaxation, what is to happen? To this question two sets of facts reply eloquently; one of them, the liability of the syphilitic heart to sudden suspension of work; the other, the state of the cardiac wall as revealed by the microscope. The cardiac wall demands blood in diastole but is disappointed by the coronary stricture, and has to put up

FIG. 14.

Radiogram of heart from which Figs. 12 and 13 were taken. The coronary vessels, which have been injected with an opaque substance, show no stricture or other gross deformity.

FIG. 13.



The same coronary vessel C immediately after its origin, injected to show that the narrowing is limited to the orifice.

with such meagre supplement as it can get from the Thebesian veins. Small wonder that the muscle-fibres shrink and are replaced by fibrous tissue. So dangerous a matter as this starvation of one of the vital tissues must make itself known somehow, whenever the demands of exercise threaten to go too far; and that protest takes the form of stenocardia, a plain hint that cannot be ignored.

(4) The last of our questions, that which asks why

these lesions take so long to develop, cannot be answered with full assurance. Yet I believe the evidence furnished by a consideration of the histological facts justifies certain significant deductions. No one approaching these facts without bias can fail to be struck by the fact that the most constant and serious lesion is an inflammation of a productive kind in the tissue immediately surrounding the aorta. Now Klotz,[33] in 1918, wrote an important paper which has been somewhat neglected, though not by Clifford Allbutt, who recognised its value when speaking on visceral syphilis in 1921. The burden of this paper was the significance of the lymphatic arrangements of the aortic sheath, especially as these concern the distribution of the syphilitic virus.

THE LYMPHATICS AROUND THE AORTA.

This view accords with the histological facts. The inflammatory reaction is at its most intense in the connective tissue that surrounds the aorta. Forbidden by the outer wall of the media to pass on in a direct line, it filters through by following the vasa vasorum. These are thereby soaked in poison and their walls swell. The virus, passing in along these small vessels, separates the layers of elastic

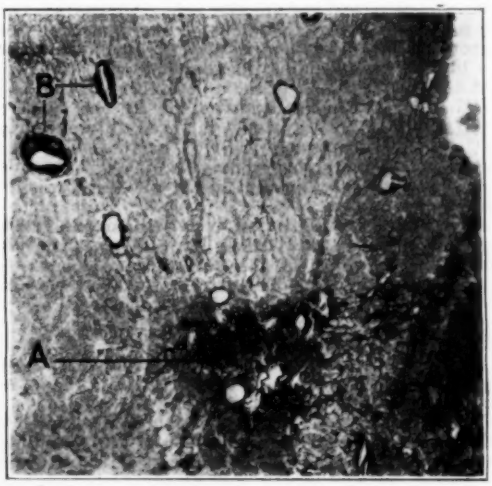
FIG. 15.

Area of "œdema" in myocardium, showing a few plasma cells.

tissue from each other, makes between them spaces filled with inflammatory cells, organised blood-vessels, and new connective tissue, and often breaks through the elastic fibres so freely as to create wide fissures extending through the whole thickness of the media. The intima saves the situation by buttressing the weakened media, which nevertheless may so crack and yield as to allow aneurysms to form. In any case the loss of elasticity in the aortic wall is a heavy blow to circulatory efficiency. Other blows, even more serious, are sustained because the infective process spreads both within the media, along the interfibrous planes, and without, in the periaortic lymphatics, to the aortic base, where it nips the coronary arteries and deforms the valves. The first of these starves the ventricular wall; the second, by making the aortic valves leak, increases its work. If some malign agency, endowed with a capacity for purposeful activity, were to busy itself with plans for bringing the action of the heart to an end, it could scarcely hit upon a subtler plan than this.

The point is that these infective phenomena arise somewhere outside the aortic wall and reach it by lymphatic channels. Whence do they come? We derive a hint of the importance of this matter from a recent paper by R. O. Stern[47] which Dr. Macdonald Critchley commended to me, a paper which argues, on histological grounds, in favour of a lymphogenous origin for tabes dorsalis and suggests that it is from the aortic lesions that the toxins are derived. This is not quite the whole truth, I think, for the incuba-

FIG. 16.

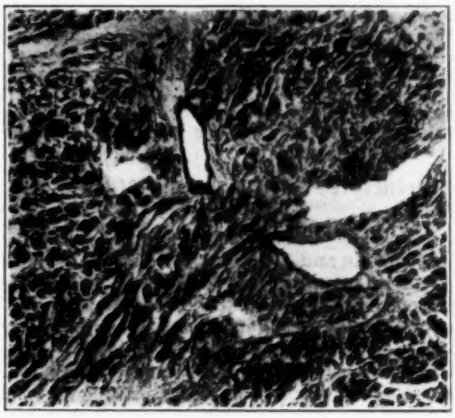


Section of myocardium showing (A) wedge of necrotic muscle, (B) arteritis of coronary twigs.

tion period of the tabetic lesion is not so long as that of the aortic. Is it not probable that there is some common reservoir of poison from which both spinal and aortic lesions are initiated?

I know that we are told that spirochætes and an inflammatory reaction are found in the aortic and myocardial tissues within a few months after infection. But the same is true, presumably, of every tissue and organ in the body. It has just been satu-

FIG. 17.



Wall of left ventricle to show dilated Thebesian veins coinciding with muscular atrophy and increase of connective tissue.

rated with spirochætes, and it would be remarkable if these inflicted no immediate injury. We know, also, that in all parts of the body remnants of this infection linger, setting up a granulomatous reaction here and there, and also inflicting permanent injuries on a few arteries. No tissue is exempt from this kind of accident; yet in the 18 hearts that were examined thoroughly, only one showed a granulomatous focus and that a small one; while only

one other displayed any inflammatory lesion of the coronary branches. On the other hand, aortitis was present in all of them. It is this, the lymph-borne lesion, that is the inevitable one; the blood-borne phenomena are comparatively rare accidents. Here again is a likeness to the nervous lesions of syphilis. Arteritis, gumma, and myelitis are the exceptions; tabo-paralytic lesions are the rule. Of course, there are in both systems examples of overlapping. Gummatous lesions may occur in patients who also display the later lymphogenous phenomena. But the broad fact is that syphilis, after it has entered the body, whether by a local inoculation or by the maternal blood, attacks both systems in three different stages and in three different ways; bacteriæmic, focal, and lymphogenous phases may be successively recognised in the heart as well as in the cerebro-spinal axis.

One other parallelism between the cardiac and the nervous lesions is that, being lymph-borne, the virus provokes a reaction in the fibrous investments that would be unimportant if it were not that vital tissues are included within those investments. Possibly, the truth is rather this, that in this last phase of the infection the lesions are more widely distributed than we suspect, but that we know nothing about them except where they attack vital organs and excite noticeable symptoms.

When we consider all these analogies between the spinal and the aortic manifestation of late syphilis we are not surprised at the occurrence of the Babinski syndrome, either in its full-blown form of tabes with aneurysm or in the less distinct developments of a similar coincidence. And we begin to ask whether it may not be more than a coincidence; whether these may be two nearly related branches of a main stream. If so, from what reservoir does that stream issue? May this not lie in the mediastinal lymph glands? Klotz hints at this, speaking of the mediastinitis that accompanies aneurysm. This is not always perceptible to the naked eye, yet it may at times lead to dense mediastinal fibrosis. I have a vivid recollection of the difficulty that it added to the removal from the thorax of a certain large aneurysm that I wanted for a museum specimen. Lymphadenitis is a prominent feature of secondary syphilis, and presumably this is as true of the glands that we cannot feel because they are internal as it is of those that we can feel because they lie externally. It is likely, so it seems to me, that within these glands the infection is apt to survive, and thence to pour out a stream of toxins which, carried by lymphatic channels, do irreparable injury to both aorta and cord. It is an interesting hypothesis, the verification or rejection of which must be left to those who have the material and the skill to use it.

The Principles of Diagnosis, Prognosis, and Treatment.

Usually a diagnosis of organic disease of the heart has been made and a cause has to be found. In cases of (1) aortic regurgitation, (2) general or aneurysmal dilatation of the aorta, (3) cardiac pain, (4) ventricular, or less often auricular, or junctional failure, especially when they occur in a middle-aged male, evidence of a syphilitic origin must be sought. It is obtained either in the patient's history, or in the presence of some other syphilitic lesion such as tabes or a periosteal node; or by a Wassermann test. Ulcerative endocarditis may have a syphilitic basis, and similar evidence should be sought if the valvular lesion be aortic. The discovery of a syphilitic element in such a case may favourably influence the reaction to treatment. Sometimes it is justifiable, even when all these modes of inquiry end in nothing positive, to treat the patient as if he had been proved to be syphilitic; and occasionally the results justify that suspicion.

There is a group of patients who, convicted of some other form of syphilis, also display doubtful signs of cardiovascular disease. Of these, Phillips[42] said in 1897 that "evidences which we might sometimes set aside as too slight to denote important cardiac disease must not be so set aside in syphilitic persons."

Prognosis, in the nature of things, cannot be good, once a definite diagnosis of cardio-aortic syphilis has been made. My own 103 cases have yielded a number of data that I may summarise thus:—

TABLE VII.

Years since first seen.	Alive.	Dead.	Total.
1–4	21	19	40
5–8	7	13	20
9–12	1	27	28
Total	.. ..	.. ..	88

In 17 fatal cases death followed onset of symptoms in 2·5 years.

These experiences may be compared with those of Mitchell Bruce, who gives 5¼ years from the onset of symptoms as the average duration; of Deneke, who found 84 per cent. fatal in four years; and with others which teach broadly similar lessons.

The precarious outlook before the cardiosyphilitic is proverbial. In this respect the syphilitic surpasses all other cardiac lesions. This is because no other cardiac lesion so effectively reduces the blood-supply of the heart to an irreducible minimum without any margin for emergencies. Evidence of coronary stenosis or of the resulting myocardial starvation is therefore particularly unwelcome. I am, of course, not forgetting that we have in the occasional coexistence of aneurysm an additional reason for dreading sudden catastrophes; and it is not possible to give a reassuring forecast to the relatives or friends of anyone who has been proved to suffer from cardiac syphilis.

Notwithstanding these depressing facts, it is well worth while to treat this disease thoroughly. The one therapeutic axiom that I would venture to state is that a diagnosis of cardiac syphilis carries with it the implication that its subject will be under treatment, more or less active, for the rest of his life. It seems clear, from the look of some of the lesions I have examined, that even when the syphilitic process itself is terminated the residual damage, to the aorta in particular, so reduces the efficiency of the circulatory pump that the addition of other deleterious processes, especially those of atheroma and high arterial tension, brings to the ground a man who if he had had no syphilis might have lived ten or twenty years longer. Therefore no matter how successful the antisyphilitic treatment may appear to be, we ought not to forget that the more completely the infection is controlled the less residual injury there will be, and the better will the patient be able to bear the other stresses and perils in which advancing years must inevitably involve his arterial tree.

The broad plan of treatment indicated is a continuous supply of potassium iodide and mercury; continuous that is, in the sense that the patient must not stop it unless the doctor tells him to; and, superimposed on this background of continuous treatment, an occasional course of organic arsenic. For instance, one should try to persuade the patient to receive about twice in a year a course of novarsenobenzol given in moderate weekly doses, not often rising above 0·45 g. per dose, and amounting to a total of 5 g. in all. It is much better to spread the course out over a long period than to attempt to hurry through it, the difficulty being that the patient

naturally wants to get the maximum amount of benefit in the minimum amount of time. Often in the early stages he feels so well that he cannot see why so much fuss is made over him, and this makes him all the less inclined to be patient and persevering. My own belief, however, is that continuity in the administration of iodide and mercury is of more importance than courses of organic arsenic. A diagnosis of aortic syphilis also implies unfitness for strenuous work and for violent exercise of any kind. Moreover, it imposes on its subject a need for strict temperance in the use of alcohol.

If the sole reason for an interest in the subject that we have been discussing lay in the opportunity that it offers for successful treatment then, indeed, our time would have been largely wasted. There is, however, a far stronger motive impelling us to study this disease and to make known the outcome of our studies, and that is a desire to emphasise the urgent need for prevention and early treatment of syphilitic infection. If it is a melancholy reflection that in this disease we see a wholly needless wastage of valuable lives we may perhaps derive consolation from seeing in it also a supreme example of the immense power of enlightened public opinion as an engine of preventive medicine.

REFERENCES.

1. Allan, G. A.: Glasg. Med. Jour., 1924, cii., 81.
2. Allbutt, T. C.: St. George's Hosp. Reports, 1868, iii., 56.
3. Horder, T. J.: THE LANCET, 1926, i., 695.
4. Anderson, J.: Ibid., 1915, i., 648.
5. Beretervide, E. A., and J. J.: Arch. de méd. des enfants, Paris, 1924, xxvii., 257.
6. Bruce, J. M.: THE LANCET, 1911, ii., 69, 144, 205.
7. Nixon, J. A.: St. Bart.'s Hosp. Rep., 1911, xlvii., 43.
8. Clarke, R. C., Coombs, C. F., Hadfield, G., and Todd, A. T.: Quart. Jour. Med., 1927, xxi., 51.
9. Clawson, B. J., and Bell, E. T.: Arch. Pathol. and Labor. Med., 1927, ii., 922.
10. Coffen, T. H.: Amer. Heart Jour., 1929, v., 99.
11. Coombs, C. F., and Herapath, C. E. K.: Clin. Jour., Nov., 1926, lv., 529.
12. Coombs, C. F., and Herapath, C. E. K.: Bristol Med.-Chir. Jour., 1924, xli., 154.
13. Coombs, C. F., and Hadfield, G.: THE LANCET, 1926, i., 14.
14. Corrigan D.: Edin. Med. and Surg. Jour., 1832, x., 225.
15. Corvisart, J. N.: Essais sur les maladies du cœur, Paris, 1811.
16. Cowan, J. M., and Faulds, J. S.: Brit. Med. Jour., 1929, ii., 285.
17. Cummer, C. L., and Dexter, R.: Jour. Amer. Med. Assoc., 1912, ii., 419.
18. Cutting, R. A., Loria, F. L., and Pickell, F. W.: Annals of Surgery, 1930, xci., 269.
19. Donnison, C. P.: Personal communication.
20. Fraser, F. R.: THE LANCET, 1927, i., 529, 589, 643.
21. Fordyce, A. D.: Brit. Med. Jour., 1930, i., 530.
22. Gallavardin, L.: Jour. de médicine de Lyon, Sept. 22nd, 1922.
23. Hall, F. de H.: THE LANCET, 1913, i., 803, 869, 945.
24. Hare, D., and Ross, J.: Ibid, 1929., ii., 806.
25. Harmer, I. M.: Heart, xii., 371.
26. Harris, I.: Brit. Med. Jour., 1928, i., 840.
27. Heimann, H. L.: Personal communication (see also Brit. Med. Jour., 1929, i., 344).
28. Heubner: Die Luetischen Erkrankungen der Hirnarterien, 1874.
29. Hodgson, J.: A Treatise on Diseases of the Arteries and Veins, London, 1815.
30. Juster, I. R., and Pardee, H. E. B.: Amer. Heart Jour., 1929, v. 84.
31. Keefer, C. S., and Resnik, W. H.: Archives of Internal Medicine, 1926, xxxvii., 264.
32. Keith, A., and Miller, C. H.: THE LANCET, 1906, ii., 1429.
33. Klotz, O. M.: Amer. Jour. Med. Sciences, 1918, i., 92.
34. Laignel-Lavastine, and Vinhit: Presse médicale, 1913, xxi., 607.
35. Levine, S. A.: Medicine Monographs, xvi.
36. Grant, R. T., Wood, J. E., and Jones, T. D.: Heart, 1928, xiv., 247.
37. Lian, C., Gilbert-Dreyfus, and Puech, P.: Bull. et. mém. de la soc. méd. des hôp. de Paris, 1927, li., 26.
38. Longcope, W. T.: Amer. Jour. Med. Sci., 1913, ii., 513.
39. Marañon, G.: El problema de la aortitis, Madrid, 1928.
40. Oberndorfer: Münch. med. Woch., 1913, lx., 505.
41. Parkinson, J., and Bedford, D. E.: Quart. Jour. Med., 1926, xix., 113.
42. Phillips, S.: THE LANCET, 1897, i., 223.
43. Reid, W. D.: Boston Med. and Surg. Jour., 1920, ii., 67.
44. Ricord, P.: Gazette des Hôpitaux, August, 1845, xvi., 101.
45. Rolleston, H. D.: Cardiovascular Diseases Since Harvey's Discovery, Cambridge, 1928.
46. Scott, R. W., and Saphir, O.: Amer. Jour. Pathol., 1927, iii., 527.
47. Stern, R. M.: Brain, 1929, lii., 295.

(*Continued at foot of next column.*)

THE BI-COLOURED GUAIAC TEST FOR THE CEREBRO-SPINAL FLUID.

BY J. GODWIN GREENFIELD, M.D. EDIN., F.R.C.P. LOND.,

PATHOLOGIST TO THE NATIONAL HOSPITAL, QUEEN-SQUARE;

AND

RUBY O. STERN, M.B. LOND.,

CLINICAL ASSISTANT AT THE HOSPITAL.

THE bi-coloured guaiac test on the cerebro-spinal fluid was introduced in 1929 by de Thurzo, who, working in the laboratory of the National Hospital for Diseases of the Nervous System, applied this new colloidal reaction to the cerebro-spinal fluid and investigated its behaviour with a number of pathological fluids.

The object of this paper is to record the results we have obtained in a further series of fluids examined in the same laboratory, and to assess the practical value of the test.

Description of the Test.

The colloidal system used in the bi-coloured guaiac (B.G.) reaction is a suspension of guaiac resin with two coloured solutions of dyes, naphthol green and brilliant fuchsin. The brilliant fuchsin tends to be precipitated along with the resin in certain pathological fluids, and thus we obtain colour changes from red to green through an intermediate, but obvious grey coloration. The B.G. solution itself is easy to prepare and gives remarkably constant reactions. Standardisation of the solution is therefore unnecessary.

Theoretical considerations of the reaction will not be discussed here, for de Thurzo has dealt with them in his paper.[1] It is sufficient to state that he ascribes the reaction to a particular sensitiveness of the colloidal system used to one fraction of the protein content of the cerebro-spinal fluid, euglobulin. A relative increase in this fraction, as found in different forms of neurosyphilis, causes precipitation of two components of the colloidal system and a characteristic change in colour. The Lange colloidal gold reaction appears to be produced in the same way. We have performed this reaction also on all the fluids in our series for the purpose of comparing the two reactions.

PREPARATION OF THE SUSPENSION.

Two solutions are required: *Solution 1* consists of 0·2 per cent. sodium chloride with 1 c.cm. of ½ per cent

References continued from previous column.

48. Stolkind, E. J.: Brit. Jour. Child. Dis., 1920, xvii., 126.
49. Sumbal, J.: Bratislavske Lekarske Listy 1928, p. 267; (abstr. Brit. Med. Jour. Epit., Sept. 22nd, 1928).
50. Smith, D. C., and Kimbrough, R. D.: Southern Med. Jour., 1928, xxi., 634.
51. Symmers, D.: Jour. Amer. Med. Assoc., 1916, lxvi., 1457.
52. Turnbull, H. M.: Quart. Jour. Med., 1915, viii., 201.
53. Turner, K. B., and White, P. D.: Arch. Int. Med., 1927, xxxix., 1.
54. Vela: Quoted by Marañon (q.v., supra., 39).
55. Virchow, R.: Arch. für Pathol. Anat. und Physiol., 1858, xv. 217.
56. von Glahn W. C., and Wilshusen, H. F.: Proc., New York Path. Soc., 1924, xxiv., 71.
57. Welch, F. H.: Med.-Chir. Trans., 1876, lix., 59.
58. Wilks, S.: Trans. Path. Soc. Lond., 1857, viii., 56.
59. Wittgenstein, A.: Münch. med. Woch., 1924, lxxi., 1384.
60. Worster-Drought, C., and Danvers-Atkinson, F. C.: Clin. Jour., 1929, lviii., 355.
61. Wyckoff, J. A., and Lingg, C.: Amer. Heart Jour., 1926, i., 446.
62. Waldo, H., and Herapath, C. E. K.: THE LANCET, 1922, i., 271.
63. Wearn: New Eng. Jour. Med., 1928, cxcviii., 726.

sodium carbonate added to each 100 c.cm. of saline. The sodium carbonate solution keeps indefinitely. De Thurzo suggests that the saline should be prepared freshly for each test from a stock 10 per cent. solution diluted, but we have found it advisable to make up the 0·2 per cent. solution from the dry salt each time. *Solution 2* is the bi-coloured guaiac suspension, which is prepared as follows: 0·22 c.cm. of 20 per cent. tincture of guaiac (B.P.C.) in 9 c.cm. of absolute alcohol are added to a flask containing 40 c.cm. of distilled water.

This mixing of the suspension must be done very slowly and with constant shaking of the flask. The best method of mixing these two solutions is to pipette the guaiac tincture into the water from a 1 c.cm. pipette, allowing not more than 0·5 c.cm. to be delivered at a time, and shaking well between the delivery of each few drops. As the success of the test depends on the thorough mixing of these two solutions, it is important not to hurry this step. 2 c.cm. of a watery solution of naphthol green (Gurr) are then slowly added to the suspension. The flask should be shaken after this is added. Finally, 0·3 c.cm. of an alcoholic solution of brilliant fuchsin (basic fuchsin, Gurr), is added, and the flask again shaken. *It is then left to stand for 30 minutes before use.*

A good suspension should be slightly opalescent and of a dark cherry red colour when freshly prepared. The colour fades to a light cherry red by the end of half an hour, and after twelve hours the colour is a rather dirty shade of pink. The suspension can only be used within three hours of preparation, as after this time the sensitivity alters, and anomalous results are obtained.

TECHNIQUE OF THE TEST.

Each test is carried out thus: ten test-tubes, 4 inches in length, are set out in a rack. 0·5 c.cm. of cerebro-spinal fluid is put into the first and second tubes, leaving the pipette in the second tube. 0·5 c.cm. of solution 1 is added to each of the tubes 2 to 10. The cerebro-spinal fluid in tube 2 is mixed with the saline, and 0·5 c.cm. is transferred to tube 3. Mixing takes place as in tube 2, and 0·5 c.cm. is transferred to tube 4, and so on to tube 10, from which 0·5 c.cm. is removed and rejected. The dilutions of cerebro-spinal fluid are therefore 1/1, ½, ¼ .... to 1/512. 0·5 c.cm. of the B.G. suspension is added to each tube. The rack is well shaken and set aside. The results are read after 12 to 18 hours by transmitted light, preferably by electric light.

In reading the test the alterations in colour are represented by numbers: 0 = No change. 1 = Slight precipitation, some turbidity; no change in colour. 2 = Red precipitation; upper fluid greyish or greyish-red. 3 = Red precipitation; upper fluid greyish-green to dull green. 4 = Red precipitation; upper fluid vivid green. There is no difficulty about reading the changes in colour indicated by figures 3 and 4. The only difficulty arises occasionally in deciding whether the change in colour is represented better by the figures 1 or 2. This difficulty soon vanishes with experience in reading the test.

Results.

Our series comprised fluids from patients with the following diseases (the figure after the disease indicates the number of cases of the particular disease in which we examined the fluid): general paralysis (52), tabes dorsalis (23), cerebro-spinal syphilis (11), disseminated sclerosis (21), cerebral tumour (7), spinal compression (6), cerebral abscess (2), syphilitic meningitis (2), chronic meningitis (2), polyneuritis (2), hemiplegia, cerebral thrombosis, acute meningitis, Friedreich's ataxia, osteitis of orbit, local meningitis, cerebral malaria, third nerve palsy and arthritis, one case of each. The fluids of many of the syphilitic cases, especially those of general paralysis, were examined on several occasions. The Lange reaction was done first on every fluid, and only those which gave a reading of (2) in at least one tube were used for the B.G. reaction. It was found that fluids giving a reading of only (1) in the Lange reaction did not give any colour change with the B.G. reaction, and except for control cases they have been excluded from this series.

The results indicate that the B.G. reaction closely resembles the Lange reaction in its behaviour towards syphilitic fluids. The only fluids which produced complete precipitation in any tube with a clear green supernatant fluid in the B.G. reaction were, with a very few exceptions, those from cases of general paralysis. The exceptions were: a case of polyneuritis with a protein content of 1 per cent., two cases of tabes dorsalis, and three cases of disseminated sclerosis. Reference to these cases will be made later. We found that, with the exception again of certain cases of disseminated sclerosis and of cases with an exceptionally high protein content, precipitation represented by figures 2, 3, and 4 occurred only in neurosyphilis. The increase in protein content necessary to produce a very slight precipitation of the B.G. suspension produced a very definite "shift to the right," or meningitic curve, in the Lange colloidal gold suspension. For example, a fluid from a case of polyneuritis with a protein content of 0·45 per cent. gave a Lange reaction of 0001123333, but a completely negative B.G. reaction.

Whatever the theoretical basis of the reaction may be—i.e., whether the colour change is due to an increase in the proportion of euglobulin or not—it is clear that the B.G. reaction is decidedly more sensitive to syphilitic fluids, however low their protein content, than to non-syphilitic fluids with a very high protein content. The B.G. suspension thus seems to be more selective in its reaction than is the Lange gold-sol.

GENERAL PARALYSIS.

The majority of fluids from cases of general paralysis gave a reading of the type 244444321. It was rare to find complete precipitation in the first tube—i.e., with undiluted cerebro-spinal fluid. The strongest reaction was seen in the third tube in practically every case. Not uncommonly a slight reaction in the first tube was followed by complete precipitation in the next six, a reaction of the type 1444444211. In only eight out of our 52 fluids from cases of general paralysis was there less than complete precipitation in at least one tube—i.e., about 14·5 per cent. failed to give the paretic reaction. Of these eight fluids, only three which were examined on several occasions, gave at any time complete precipitation with the Lange reaction.

Table I. gives the readings of a few fluids which were examined several times. Most of the patients from whom the fluids were taken were treated by malaria after the first examination of the fluid. It is interesting to note that in this series of cases the colloidal reactions were very seldom altered by treatment, although the cell count fell rapidly in every case, in some almost to within normal limits. The Lange reaction is given for comparison with the B.G. reaction. No relation between clinical improvement and alteration in the colloidal reactions could be established. Progress seemed to be related rather to the number of cells in the fluid, for in those cases which did not improve after malarial therapy, the cell count remained high. It may be of interest also to point out that the course of novarsenobillon which was given to many patients after malaria treatment, likewise had no effect on the colloidal reactions.

TABES DORSALIS.

The results of the test in tabes conformed less to one type than those in general paralysis, but again the reaction approximated to that given by the Lange test. An average reading was 0012321000. Out

of 23 cases, three were completely negative. Of these the Lange reaction was negative in one case, though the Wassermann was positive in cerebro-spinal fluid and blood; in the second, the Lange gave a typical luetic reading, but the Wassermann was negative; whilst in the third, the Lange reading was very low. One case which was diagnosed as a pure tabes, gave the typical paretic reading of 1344444431, with a Lange reading of 5555555554. Later clinical examination revealed mental changes consistent with early paresis. One other case of tabes which gave a paretic response to the B.G. test and complete precipitation in the Lange reaction is still under observation.

TABLE I.

Case and treatment.	Date.	Cells per c.mm.	Total protein.*	Nonne Apelt.	Pandy.	Lange.	B.G. reaction.
1. M. + N.A.B.	12/9/29	3	100	+ +	+ +	4455443210	0133111000
	23/9/29	16	75	+	+	4445321000	0111111100
	30/9/29	6	75	+ +	+ +	3444321000	1443331100
	7/10/29	3	80	+	+	1122100000	1122232100
	21/10/29	5	90	+ +	+ +	0221211000	1221111000
	28/10/29	7·5	75	+ +	+ +	4354543221	0243322111
2. M. + N.A.B.	4/2/30	30	80	+	+	5555544221	3444444442
	25/3/30	1	90	+	+	5555555432	2444443211
	9/4/30	2	60	+	+	5555555543	2444444421
	16/4/30	2·5	75	+ +	+ +	5555555321	4444444311
	29/4/30	3	55	+	+	5555533110	3444444211
3. M. + N.A.B.	18/2/30	220	140	+ +	+ +	5555555432	4444243210
	16/4/30	6	65	+	+	4544442110	3444431100
	29/4/30	9	70	+	+	3433432100	2443443221
	7/5/30	4·5	90	+	+	2433333321	1444432100
	21/5/30	5	80	+	+	5555543200	1222321100
4. M. + N.A.B.	25/2/30	25	80	+ +	+ +	5555555555	2444444431
	9/4/30	4	60	+	+	5555555432	1444444221
	16/4/30	2	70	+ +	+ +	5555553200	2444443322
	29/4/30	2	55	+	+	4555332100	1444444421
5. N.A.B.	2/9/29	23	70	+ +	+ +	2455555534	1244444210
	23/9/29	17	70	+ +	+ +	4444543210	1232431000
	30/9/29	3	50	+ +	+ +	4445322100	2444444210
	21/10/29	4	55	+	+	3455332100	1234443110
6. M. + N.A.B.	19/9/29	135	60	+	+	4445432100	0111221110
	27/11/29	2	30	Neg.	Neg.	5555533100	0012211110
	9/12/29	4·5	50	+	+	2223210000	No change.
	6/1/30	8	70	+	+	5333321000	1111111110
7. M. + Tryp.	4/10/29	40	100	+ +	+ +	1555432100	1234443311
	26/11/29	4·5	35	+	+	5555543000	1244431110
	9/12/29	8·5	50	+	+	4555554321	2344444311
	6/1/30	6·5	90	+ +	+ +	5555554310	1244443211
8. M. + N.A.B.	4/11/29	12	60	+	+	5555452321	x343442110
	1/12/29	21	50	+	+	5555543110	1122332100
	9/12/29	4·5	50	+	+	4555554221	1233431110
9. M. + Tryp.	25/10/29	5	—	−	−	0124333211	0001321100
	1/12/29	3·5	50	+	+	5544431000	1122321100
	9/12/29	8	55	±	+	2223211000	0011110000
	6/1/30	5	60	+	+	4222210000	1111110000
10. M. + N.A.B.	1/12/29	36	75	+	+	555455432x	1344441000
	11/2/30	3	40	±	±	4421211000	2424421000
	25/2/30	5	50	+	±	5433332110	1222210000
	4/3/30	2·5	50	±	±	5433333211	0001111000
11. M.	25/9/29	17	90	+ +	+ +	5555554332	0144444443
	30/9/29	17	100	+ +	+ +	3555553210	1344444320
	22/10/29	16	150	+ +	+ +	3344433222	3444344432
12. M. + N.A.B.	25/11/29	4·5	85	+ +	+ +	3444443332	1111211000
	4/12/29	11	50	+	+	0112434332	1111111000
	9/12/29	7	80	+ +	+ +	3443332110	1221221100
13. Sulf. + Tryp.	1/12/29	B.a.	80	+	+	5544443100	x011111110
	8/12/29	2·5	60	+	+	2233332211	1332311100
	20/1/30	4·5	70	+	+	2322332100	1321110000
14. M. + Tryp.	6/1/30	9	70	+	+	5554443210	1122311000
	13/1/30	96	130	+ +	+ +	4555554210	1244441210
	20/1/30	22	110	+	+	3443442210	1242210000
15. M. + Tryp. + Sulf.	5/3/30	4	45	+	+	5555555421	1344433210
	19/3/30	3	40	+	+	5555542100	4444443210
	9/4/30	3	60	+	+	5555554100	2444444210
16. Sulf. + Tryp.	1/12/29	12	40	+	+	5555554212	1123331000
	27/1/30	9	120	+ +	+ +	5544221100	1344443210
17. M. + Sulf. + Tryp.	7/11/29	10	75	+	+	4444321110	0112321110
	20/1/30	3	70	+	+	4444333210	1322210000
18. M. + N.A.B.	25/2/30	5	120	+ +	+ +	4554444442	0011222100
	21/5/30	1	50	+	+	1232333211	0121211000
19. M. + N.A.B.	5/3/30	52	150	+ +	+ +	5555555555	2444321100
	28/5/30	2	90	+ +	+ +	4544333211	1243431000

* mg. per 100 c.cm.

M. = malarial treatment; N.A.B. = novarsenobillon; Tryp. = tryparsamide; Sulf. = sulfosin. (x in the B.G. reaction indicates that as insufficient cerebro-spinal fluid was available, the first tube was left empty.) B.a. = Blood admixture.

CEREBRO-SPINAL SYPHILIS.

Slight precipitation up to the amount expressed by the figure 2 was found in most cases of cerebro-spinal syphilis. Two typical readings were 1112110000 and x001211000. When the Wassermann reaction was negative the B.G. reaction was negative also. With one exception no fluid in this group gave a reading higher than is expressed by a 3. The exception was a case in which the diagnosis may have to be reconsidered.

The patient is a young woman of 28, whose symptoms and signs point either to cerebro-spinal syphilis (there is a suspicious history of two stillbirths), or to disseminated sclerosis. The Wassermann is negative in the cerebro-spinal fluid and blood, whilst the Lange reading is of the paretic type, 6543321000, and the B.G. reaction is 2444442000. On these laboratory findings it seems more probable that the case is one of disseminated sclerosis.

DISSEMINATED SCLEROSIS.

In view of the interest which is being centred on this disease at the present time, we propose to discuss in some detail the results we obtained in the 21 cases which we examined by the B.G. test, and to refer also to the Lange reaction in these cases.

The duration of symptoms in the cases examined varied from two weeks to 15 years. No case was in the stage of remission so far as could be ascertained. Lumbar puncture was usually done within a week of admittance to hospital, and inquiries as to progress of symptoms after the fluid had been examined invariably elicited the reply that patients felt better since they had been in hospital. The duration of symptoms bore no relation whatsoever to the colloidal reactions of the cerebro-spinal fluid. Whereas the most acute case, with a history of two weeks' diplopia and paraplegia, gave a Lange reaction of 4544443221 and a B.G. reaction of 1323421000, two other acute cases, one of six weeks and one of eight weeks' duration, gave readings of 0111000000 and no change respectively in the Lange reaction and no change in the B.G. reaction. On the other hand, a chronic case of ten years' standing gave a Lange reading of 4555553210 and a B.G. reaction of 1444421000. There was no suggestion of a fresh acute attack in this case.

It was felt that no useful purpose would be served by testing the B.G. reaction on the large number of completely negative fluids from patients with disseminated sclerosis which we examined by the Lange reaction. The total number of fluids we examined from patients with this disease during this investigation was 53. Of these, 27 gave a Lange reaction containing one or more readings of 2, and 19 were tested by the B.G. reaction, there being insufficient fluid available in the other eight cases to carry out the test. Twenty-six cases gave a completely negative Lange reaction. Two of these were tested by the B.G. reaction as controls. Table II. gives our findings in the 21 cases tested. It will be noted that in six cases the reaction is completely negative. It will also be noted that the colloidal reactions are independent of the duration of the disease.

As the examination of the fluids was carried out soon after admission to hospital it is not possible to say what effect treatment may have on the colloidal

reactions. A single observation is of no value, but as a matter of interest, the patient A. B. (Case 20), whose condition was of long standing, and who had had several courses of arsenic injections, gave one of the strongest readings of the series, both in the Lange and B.G. reaction. The B.G. reaction does not seem to be so sensitive as the Lange reaction in this disease. In only five cases, less than 25 per

TABLE II.

Case.	Duration of symptoms.	Disseminated sclerosis.				Lange.	B.G. reaction.
		Cell count per c.mm.	Total protein.*	Nonne Apelt.	Pandy.		
1	2 w.	41	55	+	+	3544443221	1323421000
2	5 w.	35	55	+	+	4455321000	x133432100
3	6 w.	7	30	−	−	0111000000	No change.
4	8 w.	51	55	−	+	No change.	No change.
5	1 y.	3	45	−	−	1222211000	No change.
6	1 y.	5	90	±	±	0122101000	0111000000
7	1 y., 9 m.	1	25	−	−	2221100000	0121100000
8	2 y.	1	70	+	+	1222332211	No change.
9	2 y.	12	120	+	+	0112221000	No change.
10	2½ y.	8	55	+	+	5555543210	1343321000
11	3 y.	8	45	±	+	3222211000	x112210000
12	3 y.	20	50	+	+	1112232110	0111100000
13	3 y.	5	65	+	+	0123221100	0011110000
14	3½ y.	3·5	200	+ +	+ +	0031221100	0110000000
15	4 y.	9	45	+	+	5444432100	3444433322
16	4½ y.	9	90	+	+	4233431000	1122111000
17	4½ y.	6·5	100	+	+	3544232110	1232321000
18	7 y.	None.	45	−	±	No change.	No change.
19	10 y.	—	100	+	+	2455544421	0122100000
20	10 y.	1	50	±	±	4555553210	1444421000
21	15 y.	7	40	−	±	1221000000	x122100000

* In mg. per 100 c.cm.
w. = weeks; m. = months; y. = years.
Abbreviations as in Table I.

cent., was there complete precipitation in any tube, and in only three cases was there a typical paretic response. The proportion of cases giving a paretic response in the Lange reaction was also not very high. In the series of 21, 7, or 33 per cent., showed this reading.

OTHER DISEASES OF THE NERVOUS SYSTEM.

Brief reference must be made to other conditions in which a positive reaction may be given by the B.G. test. These are conditions in which the protein content of the fluid is exceptionally high. In a case of polyneuritis, with a protein content of 1 per cent. and a Lange reaction of 4555422222, the B.G. reaction was 4411000000. Certain cases of spinal compression with a very high total protein gave partial precipitation, the first two or three tubes being completely unchanged, and the precipitation taking place in the fifth and sixth tubes. In other cases only the first or the first two tubes were affected. These curves therefore did not resemble those of tabes or general paralysis. In many other cases with a highly albuminous fluid a completely negative reaction was obtained.

SUMMARY AND CONCLUSIONS.

The cerebro-spinal fluids of 140 patients with diseases of the nervous system have been examined by the bi-coloured guaiac reaction. A Lange colloidal gold test has also been done on each of the fluids for comparison with the new reaction.

Our results justify the statement that the bi-coloured guaiac test is of the same practical value as the Lange test in the laboratory diagnosis of neurosyphilis. The bi-coloured guaiac test runs parallel with the Lange reaction in that certain cases of disseminated sclerosis give positive results. It differs from the Lange reaction in that negative reactions may be obtained in spite of great protein increase.

The ease and certainty with which a good bi-coloured guaiac suspension can be prepared from stock solutions gives the test a definite advantage over the Lange reaction, since good colloidal gold solutions may be difficult to prepare, and there is no satisfactory method of testing them except by their reaction to known specimens of cerebro-spinal fluid. The Lange reaction is therefore only suited to laboratories where a large number of specimens of cerebro-spinal fluid are examined.

While we have not in this investigation examined the B.G. reaction in relation to the better known mastic and benzoin reactions, previous experience indicated that the B.G. reaction is more sensitive and more easy to read, and agrees more closely in its results with the Lange reaction.

The disadvantages of the test are: (1) that a comparatively large quantity, 1 c.cm. of cerebro-spinal fluid, is required for the test; and (2) that it is not possible to judge what the final reaction will be under 12 hours, whereas with the Lange reaction a fair estimate may be made after half an hour. For these reasons we do not suggest that this test should replace the Lange test in the routine examination of the cerebro-spinal fluid. But when difficulty arises in the preparation of a good colloidal gold reagent, the bi-coloured guaiac test may be substituted, or may, owing to its more standard nature, be used as a control for the Lange test.

We desire to thank the Medical Staff of the National Hospital, Queen-square, for permission to refer to the clinical records of cases in the hospital.

REFERENCES.

1. Thurzo, E. de: The Bi-coloured Guaiac Test, Brain, 1929, lii., 196.
2. Same author: Les Nouvelles Méthodes sur les Réactions collöidales du Liquide céphalo-rachidien, Paris, 1927.

THE ÆTIOLOGY OF CHOLECYSTITIS: BACTERIOLOGICAL OBSERVATIONS.

BY BRYAN WILLIAMS, M.B. EDIN.,

VANS DUNLOP SCHOLAR, AND ASSISTANT IN THE BACTERIOLOGY DEPARTMENT, UNIVERSITY OF EDINBURGH;

AND

D. G. S. McLACHLAN, M.B. EDIN.,

LECTURER IN BACTERIOLOGY IN THE UNIVERSITY OF EDINBURGH.

BEFORE 1892 gall-stones were supposed to be produced by simple chemical precipitation of cholesterol as a result of hypercholesterolæmia. In that year, however, Naunyn showed the importance of infection in the formation of stones, and advanced his theory of a "lithogenous catarrh" of the gall-bladder. Since then, the importance of infection in gall-stone formation has been generally admitted, and Moynihan has picturesquely described how a gall-stone may be a tombstone erected to the memory of an organism still living inside.

Earlier investigations were directed rather towards the occurrence of organisms in the bile, and members of the coliform group were the chief ones isolated. Owing to the prevalence of typhoid fever at the end of the last century, much attention was paid to typhoid cholecystitis. More recently, the organisms of the enteric group have been encountered much less frequently in this condition. As will be seen below, *Bacillus paratyphosus* B was isolated only once in the present series of 106 cases.

Rosenow,[1] in 1916, was the first to stress the importance of the streptococci, and also the need for examining the wall of the gall-bladder in order to obtain an adequate idea of the organisms present. In a series of 47 cases he demonstrated the presence of streptococci, either alone or in combination, in 66 per cent. of cases in which the wall was examined. *B. coli* and other organisms occurred less frequently. He found that these organisms had a very marked tendency to localise electively in the gall-bladder of experimental animals. Thus in 53 animals, the gall-bladder was attacked in 79 per cent. of cases, and other organs much less frequently. These results were obtained with freshly isolated strains, and as the result of inoculating considerable quantities of culture. A. L. Wilkie [2] has recently claimed similar results. In 50 cases he isolated streptococci from the cystic gland in 86 per cent., and from the gall-bladder wall in 42 per cent. The bile, on the other hand, was generally sterile. He considered that the streptococci were susceptible to the action of bile, and found that they had considerable affinity for the gall-bladder of rabbits, invariably producing a progressive chronic cholecystitis.

The present work was undertaken with the object of investigating the occurrence of streptococci in cholecystitis and their biological characters, and also their power of attacking the gall-bladder of animals on intravenous injection. Attention has been directed towards cholecystitis rather than cholelithiasis. It is impossible, however, in any experimental work to dissociate the two conditions. Undoubtedly either condition may occur without the other, and either may predispose to the other. In the great majority of cases dealt with clinically, however, we find that the two conditions coexist, though of recent years there has been a tendency to operate on earlier cases, especially since the introduction of cholecystography.

Technique of Present Investigation.

Material from 106 cases of cholecystitis had been examined. The following technique was observed when specimens were taken at operation.

After removal of the gall-bladder the cystic gland, when palpable, was dissected off and placed in a sterile test-tube. The clamp on the cystic duct was then replaced by a ligature in order to prevent escape of bile, and the gall-bladder was removed to the laboratory in a covered sterile dish or sterile swabs. In most cases cultures have been made from the specimens immediately after removal from the theatre; on a few occasions an interval of three or four hours elapsed. Other cases where the interval was longer have been excluded from consideration.

In the laboratory the cystic gland was first cultured. With due precautions it was transferred to a covered sterile mortar, minced up with sterile scissors, and emulsified in broth with a pestle. Tubes of warm glucose broth and, in some cases, blood-agar plates, were then inoculated with the emulsion. Cultures were incubated for at least seven days or until growth occurred.

Cultures were also made from the gall-bladder wall. The peritoneum and the layer of subperitoneal fat, which is usually present in chronically diseased gall-bladders, were reflected with sterile instruments and the so-called "submucous" coat exposed. Strips of this were dissected away, without opening the lumen of the gall-bladder, and cultured in the same way as the cystic gland. The lumen of the gall-bladder was next opened, and cultures made from the bile or other contents or from the surface of the mucous membrane or stones.

In cases in which the wall was only slightly thickened—and there were many of this nature in the series—it was not found possible to obtain an adequate amount of the submucous layer for culture without opening the lumen of the gall-bladder, and in these circumstances fragments of the whole thickness of the wall were used. In order to kill any organisms present on the surface of the tissue in the bile, several of the fragments were cultured after being washed with sterile saline, or after momentary exposure to boiling water or brief immersion in spirit followed by washing with saline.

Cultures were made from gall-stones after the surface had been sterilised by immersion in spirit and flaming. If large, the stones were cut with a sterile knife and the centre scooped out and emulsified. If small, the complete stone was emulsified.

The media employed were glucose broth, phosphate broth, glucose agar in deep tubes, and rabbit blood-agar plates. Glucose brain broth was used in some cases. Rosenow has stressed the importance of fluid media for supplying all grades of oxygen tension. Primary broth cultures were purified by plating out on a blood-agar plate. In a few cases organisms resembling *B. subtilis* and unidentified cocci of the nature of sarcinæ have been obtained. These have been regarded as contaminants.

Classification and Findings.

The classification of the gall-bladders examined has presented some difficulty, owing to the enormous variation in the pathological changes present. Most classifications of cholecystitis seem to be needlessly complicated, and we have adopted the simple but convenient divisions of acute cholecystitis, chronic cholecystitis with or without stones, and cholesterosis.

ACUTE CHOLECYSTITIS.

The four cases grouped under the heading of acute cholecystitis derive their place rather from clinical reasons. All were admitted as emergency cases, three being operated on at once and the fourth within a few days. Two of the patients subsequently died. Gross inflammation was present in all, the gall-bladder in two cases being gangrenous. Stones were removed in three cases.

TABLE I.—*Acute Cholecystitis.* (*Four Cases.*)

Case.	Diagnosis.	Gall-bladder wall.	Contents.
1	Acute cholecystitis with stones.	*B. welchii.*	*B. coli.*
2	Gangrenous cholecystitis with stones.	No growth.	*B. coli.* Enterococcus. *B. welchii.*
3	Acute cholecystitis, gall-bladder being partly gangrenous.	*B. welchii.*	*B. coli.*
4	Gangrenous cholecystitis with stones.	*B. coli.*	,,

The bacteriological findings in each case are shown in Table I. It will be noted that *B. coli* occurred in every case and *B. welchii* in two cases.

CHRONIC CHOLECYSTITIS.

The second group comprises the great majority of cases. In gross pathology the specimens showed great variation, all degrees of inflammation being represented. Several cases of empyema or mucocele

TABLE II.—*Chronic Cholecystitis With or Without Stones.* (*93 Cases.*)

Cases	Gland. 43	Wall. 84	Contents. 81	Stones. 41
Streptococcus	7	10	15	2
,, plus *B. coli* ..	1	4	6	—
B. coli	6	15	10	5
Diphtheroid bacilli ..	4	4	1	—
B. welchii	1	3	1	—
Staphylococcus aureus ..	1	2	1	—
Staphylococcus albus ..	4	8	4	2
B. paratyphosus B. ..	—	—	1	—
No growth	19	41	43	31
				B. py. 1.

B. py. = *B. pyocyaneus.*

and a number of cases of stone in the common bile-duct have been included. Many specimens showed evidence of recent inflammation. Stones were present in 72 out of the 93 cases. The results of the cultures are shown in Table II.

CYSTIC GLAND.

The cystic gland, which varied in size from that of a pinhead to a small bean, was examined in 43 cases. In some cases, in which it could not be identified with certainty, the connective tissue from the neck of the gall-bladder was cultured, but as this was never found to give a growth unless contaminated with bile these cases have not been included in the Tables. On several occasions the tissue was removed from the culture tube at periods varying between three and seven hours, on the supposition that there might be some substance in the tissue which inhibited bacterial growth. There was no difference in result, however, between these tubes and others in which the tissue was allowed to remain.

It will be seen from Table II. that streptococci were obtained in eight cases (19 per cent.) and *B. coli* in seven cases (16 per cent.) in which the cystic gland was cultured. It is impossible to exclude contamination of the gland by bile in some cases in which the same organism was obtained from both gland and bile, owing to the exposed position of the gland when the duct is divided. Thus, on four occasions on which a streptococcus was cultivated from the cystic gland a similar organism was also obtained from the bile.

GALL-BLADDER WALL.

The gall-bladder wall was examined in 84 cases, and the presence of streptococci, either alone or in combination with *B. coli*, was demonstrated on 14 occasions (17 per cent.), *B. coli* was isolated in 19 cases (23 per cent.). On seven occasions a streptococcus similar to that found in the wall was obtained from the bile. In three further cases a similar organism was found in gland, wall and bile, and in one other case in the gland and bile. Of the 24 cases in this group in which streptococci were found, in only five were they not found in the bile. In one of these the bile was not examined. In three others streptococci were found, either alone or in combination with *B. coli* in the wall, while *B. coli* was found in the bile. In the tabulation of the results an organism has been considered to be an intramural one if it has been obtained either from the outer coats or from the whole thickness of the wall, when the bile has given no growth, or after sterilisation by one of the methods described above.

The results of the cultures have often been surprising. Occasionally naked-eye appearances are extremely deceptive. It may be stated on the whole, however, as noted by Illingworth,[3] that the specimens most likely to give a growth are those with a thick and œdematous wall.

CONTENTS.

The bile, mucus, pus, or other contents of the gall-bladder or the surface of stones have been examined in 81 cases of chronic cholecystitis, and the results are shown in Table II. Here, again, as noted by Illingworth, naked-eye appearances are very deceptive. A purulent-looking content may be sterile, while thin bile may yield a growth. The important factor, however, seems to be the concentration of the bile. It has been found that thick, tarry bile, so often looked upon with suspicion, is always sterile, whereas white bile is nearly always infected.

Streptococci were isolated from the contents in 21 cases (26 per cent.), in six of which they were associated with *B. coli*. *B. coli* was present in 16 specimens (20 per cent.); two of the coliform strains appeared to be identical with *B. lactis aerogenes*. It is of interest to note that a streptococcus was only isolated once out of the 21 cases in this group in which stones were absent, and in that case it was isolated from the bile. In one other case in which stones were absent, *B. paratyphosus* B was obtained from the discharge from a gall-bladder sinus. This patient had several months previously suffered from paratyphoid fever, and had subsequently developed acute cholecystitis, for which drainage of the gall-bladder was carried out.

CHOLESTEROSIS.

Nine cases of this condition were investigated and the results are shown in Table III. Only those cases showing a general "strawberry" appearance of the whole mucous membrane are included under this heading. Stones were present in six cases, two of them being single cholesterin stones.

TABLE III.—*Cholesterosis.* (*Nine Cases.*)

Cases ..	Cystic gland 4	Wall. 8	Contents. 8	Stones. 3
Streptococcus ..	—	1	1	—
B. coli	—	1	—	—
Staphylococcus aureus	—	1	—	—
Staphylococcus albus	—	1	—	1
No growth ..	4	4	7	2

The low incidence of organisms in this condition, which is in accordance with the recent findings of Illingworth [4] and Nickel and Judd,[5] is of interest when we consider that inflammatory changes of some degree are nearly always present. Thus in 35 cases of Illingworth's inflammatory changes were only once absent.

Nature of the Organisms Isolated.

The classification of streptococci into hæmolytic and non-hæmolytic types is now generally accepted, and all the organisms under consideration fall into the latter type. A few of them produced tiny zones of hæmolysis on blood-agar, but none of them showed true "beta" hæmolysis. It is possible to a certain extent to tell from the general characters of a non-hæmolytic streptococcus its probable natural location in the body.

Of the eight strains isolated from the cystic gland, four corresponded definitely to enterococci in their characters of heat-resistance, tolerance of a medium containing bile, and ability to split æsculin. The other four resembled salivary streptococci. Of 15 strains obtained from the gall-bladder wall seven were enterococcal in type, and of 23 strains cultivated from the bile, nine belonged to this group. Of the remaining strains, some resembled salivary types while the rest were of the nature of *gamma* streptococci. Thomson and Thomson [6] have recently emphasised the value of Warren Crowe's medium in differentiating streptococci. A systematic study of all strains has not been carried out on this medium, but a certain number have been tested and have been found to present a variety of colony appearances. This result is in agreement with the other evidence regarding the biological diversity of our streptococci.

A serological examination of the strains isolated showed that there was considerable antigenic heterogeneity. Agglutinating antisera were prepared by immunising rabbits with three strains of *Streptococcus viridans* previously isolated from the cystic gland. Two of these strains were serologically identical, and were quite distinct from the third strain. Agglutination and agglutinin-absorption tests were carried out according to the technique described by McLachlan and Mackie.[7] These tests indicated that one of the

strains examined was related antigenically to two of the cystic gland strains, but was not identical with them, as it did not completely remove the agglutinin from the sera. A second strain likewise showed a partial antigenic similarity to the third cystic gland strain. The remainder of the viridans strains and all the enterococci which were tested did not react with these sera. Agglutinating sera were prepared for two strains of enterococcus, which were themselves serologically distinct as judged by agglutinin-absorption tests. None of the enterococci or other streptococci which we studied reacted in a significant manner with these sera.

Of the other organisms isolated, *B. coli* has occurred most frequently and occupied the most important place. With few exceptions, it has shown the biological characters of "typical *B. coli*." In two cases of cholecystitis, *B. lactis aerogenes* was isolated, and in a third case a non-lactose-fermenting variety of *B. coli* was obtained. The occurrence of *B. welchii* is of considerable interest in view of recent work on the use of *B. welchii* serum in acute abdominal conditions. It seems to have been first described in cholecystitis by Gilbert and Lipmann [8] in 1904, and has since been found by numerous observers. In the present work it was found in six cases: in the gland once, in the gall-bladder wall five times, and in the contents twice.

Animal Experiments.

In order to test the power of the organisms isolated to localise electively in the gall-bladder of experimental animals, a number of intravenous injections in rabbits were given. The organisms used were streptococci, *B. coli*, *B. paratyphosus* B, and *Staphylococcus aureus*. The strains tested were injected as soon as possible after isolation.

Twenty-four-hour broth cultures were employed, and the injection given into the ear vein. Two methods of administering the organism were practised. In the first small doses of 300 to 500 million organisms were given at weekly intervals, as advocated by A. L. Wilkie. Up to nine injections were given. In the second method, a single large dose of 5000 to 10,000 million organisms was given, and the animal was killed in a few days if the injection did not prove fatal. This is the method practised by Rosenow. The enormous doses originally employed by Rosenow, such as the deposit from 45 c.cm. of a broth culture, were not used. Rosenow has stated (1928) [9] that in his more recent work on elective localisation he has only employed one-tenth to one-fifth of the quantities formerly injected.

When the injection did not prove fatal the animals were killed by chloroform at periods varying from a week or two up to several months. All the viscera were carefully examined at once, together with several joints, and usually also the brain. Cultures were made from the heart blood, bile, gall-bladder wall and joints, and from any organ showing a lesion.

The appearance of the healthy rabbit's gall-bladder was determined from a number of examinations carried out on animals killed for other purposes. It is a very delicate structure, bluish in colour, and with a translucent wall. It can be moved freely in a sideways direction. The bile is of variable colour, but is thin and free from granules.

Thirty-one rabbits received injections of streptococci by one of the two methods described above. Twelve were injected with strains derived from the cystic gland, seven with gall-bladder wall strains, eleven with bile strains, and one with a streptococcus derived from a gall-stone. After the injection of these organisms, a gross lesion of the gall-bladder developed in only one rabbit, and there was a doubtful lesion in another animal.

In the first case the animal was inoculated with 7 c.cm. of a broth culture of a poorly growing viridans streptococcus isolated from the bile and gall-bladder wall of a case of chronic cholecystitis. The animal remained apparently well and was killed after a week. The gall-bladder was found to be thick and œdematous, and covered with fibrin. A streptococcus with the same biological characters as the strain injected was recovered from the wall. Microscopic examination of sections of the gall-bladder wall showed considerable œdema of the tissue and infiltration by large numbers of polymorphonuclear leucocytes. The epithelium had desquamated, and streptococci were found in the wall after prolonged search. Intravenous injections of the organism recovered from the gall-bladder did not produce cholecystitis in other rabbits.

In the other case in which a slight lesion of the gall-bladder was found, the animal had been injected two days previously with 7 c.cm. of a broth culture of *S. viridans* isolated from a cystic gland. The gall-bladder wall was found to be slightly œdematous, but cultures from it and also from the bile were negative.

Lesions in other organs were sometimes encountered. Thus, hæmorrhages in the stomach were found with great frequency, and in one case large vegetations were produced on the aortic valves. In no case was arthritis noted.

B. coli.—Six strains of *B. coli* were injected intravenously in different rabbits, the organisms having been isolated from the bile of patients with chronic cholecystitis in three cases, from the gall-bladder wall in two cases, and post mortem from the heart blood of one of the rabbits in one case. In one animal a gross lesion of the gall-bladder was found. The animal died two days after the injection. The gall-bladder wall was thickened, and the bile was turbid and filled with numerous tiny yellow granules, together with several black granules. *B. coli* was isolated from the bile.

B. paratyphosus B.—Three rabbits received intravenous injections of this organism. Two animals were inoculated with the strain isolated from the discharge from a gall-bladder sinus, and died after two and three days respectively. In both there were pneumonia and general congestion of the organs, and in one the gall-bladder was acutely inflamed and contained several small granules. *B. paratyphosus* B was recovered from the bile of both rabbits. The third rabbit was injected with a strain which had been isolated from sewage, and died three weeks after the injection. At autopsy the gall-bladder was whitish and thick and full of soft brownish concretions. *B. paratyphosus* B was recovered from the bile and gall-bladder wall.

Staphylococcus aureus.—Intravenous injections of this organism did not lead to cholecystitis.

DIRECT ATTACK ON THE GALL-BLADDER.

As intravenous injections of streptococci appeared to be followed in only a small proportion of cases by a definite cholecystitis, attempts were made to determine the localisation and multiplication of organisms in the gall-bladder by traumatising the viscus and inoculating cultures intravenously. The effect of trauma by itself was controlled. In carrying out this procedure a laparotomy was performed under ether anæsthesia, and the gall-bladder was gently rubbed and squeezed with the finger. Immediately after the operation an intravenous injection of streptococci was given, and repeated once or twice. The strains used had been isolated from the cystic gland, from the bile, and from the mouth of a healthy person. This procedure was carried out in four rabbits; in none of these was there any pronounced change in the naked-eye appearance of the gall-bladders. Trauma without injection was carried out in five rabbits. In two of these the gall-bladder was traumatised once, and in one the gall-bladder showed no change after an interval of two months. In the other the animal died after 19 days, and at autopsy the gall-bladder was found to be thickened and full of purulent material, from which *B. coli* was isolated.

In two other animals the gall-bladder was traumatised twice with an interval of three weeks between each operation and the animals were killed after two months. In both there was definite thickening of the gall-bladder wall. In the fifth rabbit the gall-bladder was traumatised four times at weekly intervals. The animal was killed two months after the first operation, and the gall-bladder wall was found to be thickened and surrounded by adhesions, with its lumen full of inspissated material.

The effect of injecting streptococci into the wall of the gall-bladder was also investigated. A very fine needle was used for this purpose. It was found necessary to give very small doses, as in some cases leakage of the suspension into the peritoneal cavity occurred, with subsequent peritonitis and death. This procedure was carried out in three rabbits and resulted in a slight thickening of the gall-bladder wall. A similar condition was also observed in two control animals in which sterile saline was used instead of the suspension of organisms.

Summary.

The bacteriological and experimental work detailed bove was originally undertaken with the object of investigating the rôle of streptococci in inflammatory disease of the gall-bladder, and also their power of "elective localisation," or, in other words, their selective affinity for the gall-bladder tissue of animals. As the work proceeded, streptococci were found in only a small percentage of cases, as contrasted with the incidence reported by certain other workers. Thus out of 106 cases examined, streptococci were found in 26 cases, and *B. coli* in 28 cases. Certain other facts that were in disagreement with some recent ideas on the ætiology of cholecystitis also became apparent. Thus, out of the 26 cases in the series in which streptococci were found, they were present in the bile in 21 cases. In one of the other five cases the bile was not examined; in three of them streptococci were found either alone or in combination with *B. coli* in the gall-bladder wall, whereas *B. coli* alone was found in the bile. It is thus possible that in these cases streptococci were present in the bile but were outgrown by *B. coli* in culture. In the remaining case, streptococci were found in the cystic gland, while the gall-bladder wall and bile were sterile. The high incidence of infection of the bile with streptococci is thus very striking in those cases in which this organism was present, and remains so, even if we exclude the cases of acute cholecystitis and of calculus in the common bile-duct, in which the bile is almost invariably infected. It must also be realised that any contamination of the cystic gland or outer coats of the gall-bladder wall by bile in the course of operation must increase the number of cases in which these structures are apparently infected. In our experience bile has not been inhibitory to the growth of the majority of the types of non-hæmolytic streptococci which we have encountered in these conditions; this is in accordance with the recent work of Nickel and Judd, and contrary to the findings of A. L. Wilkie.

It was also noted that a large percentage of the streptococci isolated were undoubtedly of the "enterococcus" type, which is found naturally in the bowel. The others belonged to types which are known to occur both in the mouth and in the bowel. In several cases undoubted enterococci were isolated from the cystic gland and from the gall-bladder wall. In each case also in which streptococci occurred in more than one site the strains isolated were found to have similar characters, this being in disagreement with the findings of Wilkie, who described cultural differences between the streptococci isolated from the cystic gland and the bile in the same case. It was also found in some cases that mixtures of streptococci and *B. coli*, both growing freely, were obtained from various situations.

All these facts seem to indicate that the original site of the streptococci isolated was the same as that of *B. coli* (i.e., the bowel) and that, therefore, the route of infection to the gall-bladder was presumably the same. There would seem to be no evidence that the streptococcus is the primary invader and *B. coli* the secondary invader. The part played by both in the invasion of the gall-bladder seems to be similar. We do not feel justified in concluding from our work, however, that any of the organisms we have isolated is the primary factor in the production of inflammatory changes in the gall-bladder. It is conceivable that they may all play merely the rôle of secondary invaders when once some pathological change, toxic or biochemical, has already commenced in the gall-bladder.

Further experiments are in progress with the object of determining the route by which organisms reach the gall-bladder. So far, however, our animal experiments have not supported the idea that organisms usually reach the gall-bladder by means of the systemic circulation, nor have we been able to sustain the theory that the organisms isolated in this condition have the power of localising electively in the gall-bladder of animals on intravenous injection. It has been already noted that out of 31 rabbits injected intravenously with streptococci, only two showed a gross lesion of the gall-bladder. Any action of these organisms on the gall-bladder, therefore, appears to be purely a chance one, and entirely non-specific.

Few theories in medical science have been so much debated as that of "elective localisation." On the whole, Rosenow's results have not been generally confirmed. Holman[10] has recently made a very critical analysis of Rosenow's figures. He has shown that there is very little difference in the percentage of lesions produced in various organs with specific and with non-specific strains, and that indeed in many cases the percentage is higher with the non-specific than with the specific strains. Gay,[11] however, has also analysed Rosenow's figures, with the opposite result. He finds that among 833 animals injected with 220 strains, gall-bladder lesions were produced in 80 per cent. of cases with specific strains, and only in 11 per cent. with non-specific strains.

It would be absurd to criticise the whole theory of elective localisation on the basis of the work described in this paper, but, at any rate as regards the gall-bladder, we have not been able to support it.

Conclusions.

1. Material from 106 cases of cholecystitis has been examined. Streptococci have been found in the cystic gland or gall-bladder wall in 16 per cent. of these and *B. coli* in 20 per cent. Streptococci have been found in the contents in 20 per cent. and *B. coli* in 19 per cent. 2. The streptococci isolated have been largely of the type which occur normally in the bowel. 3. No evidence has been obtained that *B. coli* is merely a secondary invader, and that the streptococci are the primary invaders. The rôle of both, whether they be primary or secondary invaders, seems to be similar. 4. The organisms isolated have very little power of localising electively in the gall-bladder of experimental animals.

We should like to express our thanks to Prof. Mackie

for his constant help and guidance throughout this work. We should also like to thank Prof. D. P. D. Wilkie, who has been at considerable pains to provide us with the greater part of the material used, and who has given us much other assistance and encouragement. Mr. Henry Wade, Mr. J. W. Struthers, Mr. J. M. Graham, and Dr.W. R. Martine have also kindly provided us with material. Mr. C. F. W. Illingworth has given us much useful advice.

The work has been done during the tenure of a Vans Dunlop scholarship by one of us (B. W.). Part of the expenses have been paid by a grant from the Moray Fund.

REFERENCES.

1. Rosenow, E. C.: Jour. Infect. Dis., 1916, xix., 527.
2. Wilkie, A. L.: Brit. Jour. Surg., 1928, xv., 450.
3. Illingworth, C. F. W.: Brit. Jour. Surg., 1927, xv., 221.
4. Idem.: Ibid., 1929, xvii., 203.
5. Nickel, A. C., and Judd, E. S.: Surg., Gyn., and Obst., 1930, l., 655.
6. Thomson, D., and Thomson, R.: Ann. Pickett-Thomson Res. Lab., 1927, vol. iii.
7. McLachlan, D. G. S., and Mackie, T. J.: Jour. Hyg., 1928, xxvii., 225.
8. Gilbert, A., and Lipmann A.: Compt. rend. Soc. biol., 1902, liv., 989.
9. Rosenow, E. C.: The Newer Knowledge of Bacteriology and Immunology, edited by Jordan and Falk, Chicago, 1928, p. 576.
10. Holman, W. L.: Arch. Path. and Lab. Med., 1928, v., 68.
11. Gay, F.: Jour. Lab. and Clin. Med., 1918, iii., 721.

THE PYROGENETIC ACTION OF SULPHUR IN OLIVE OIL.

By W. H. Shilvock, B.Sc., M.B. Birm.,

ASSISTANT MEDICAL OFFICER, RUBERY HILL MENTAL HOSPITAL, BIRMINGHAM.

Schroeder [1] and Harris [2] have reported on the use of sulphur in olive oil as an agent for the treatment of general paralysis and other psychoses, and point out that pyrexia follows its administration. I have used a preparation of sulphur in olive oil ("Colsul") made by the Crookes Laboratories, and have noted its effect in producing pyrexia. No claim is made here that this preparation is a panacea which will cure these disorders.

Control injections of collosol sulphur in water (0·1 per cent. sulphur), collosol calcium, and sterile olive oil, all prepared by the Crookes Laboratories, did not cause a rise of temperature.

METHOD OF TREATMENT.

The technique adopted is similar to that used by Schroeder and Harris. The injections are given intramuscularly into the outer side of the thigh in the morning. The temperatures are recorded every two hours for the first eight hours, and then every 30 minutes for the next two hours, and then at 15-minute intervals until the acme is reached. When this has occurred the temperature is taken every 30 minutes and then every two hours until it is normal again.

The colsul used has been supplied in 5 c.cm. phials. It is warmed before injection. The first dose is half a c.cm., and the doses are increased by half a c.cm. every alternate day for a course of ten injections, the largest dose thus being 5 c.cm. These doses are smaller than those used by the previous reporters but produce similar pyrexial reactions. A second series of injections has been given within three weeks of the completion of the first, the interval allowing time for various investigations to be made on the effect of the treatment.

[1] Schroeder, Knud: The Lancet, 1929, ii., 1081.
[2] Harris, N. G.: Ibid., 1930, i., 1068.

EFFECT OF THE INJECTIONS.

Eighteen cases have so far been treated, nine of general paralysis and nine of non-syphilitic functional mental disorder. Although the doses have been smaller there has been much more local discomfort than Schroeder claims to have noted, but this gradually passed off in the course of a few days. As a rule the temperature rises gradually, reaches its maximum in about 12 hours, and returns to normal in periods varying from 12 to 72 hours. In one case it continued over a period of five days from the initial injection, but usually it is normal within 24 hours. The temperature charts seem to show that, with the increase of dose, there is a corresponding increase of pyrexia, but this is not constant even with the same type of mental disorder, probably because of the individual peculiarities of the response of thermogenic centres. The duration of the pyrexial period depends also on the individual. The highest temperature recorded in this series of cases was 105·4°, this being at the ninth injection of 4·5 c.cm., but most of the cases gave maximum pyrexias of about 104°. In this therapy, as has also been noted with T.A.B. vaccine given intravenously, there may be secondary rises of temperature following what appears to be the fall from the acme induced by the agent itself, and these have been observed in the majority of the charts. These secondary rises delay the fall of temperature and are more in evidence when the temperatures are higher.

The extent of the pyrexial swing from subnormal or normal level at the time of injection was also found to vary with corresponding injections in different patients. The maximum alteration of temperature noted has been 7·8°, and occurred in a case at the end of a course following the injection of 5 c.cm.

The valuable property of the preparation is the comparatively small disturbance of the circulation which is associated with such elevations of temperature. In no case has a pulse-rate above 120 per minute been recorded, and nearly always the respiration ratio is approximately normal; for example, a patient after an injection of 1 c.cm. gave a maximum temperature of 104·2°, a pulse-rate of 94, and a respiration-rate of 24. Little deleterious effect on the peripheral circulation has been noted, pallor and cyanosis having rarely been seen.

In seven cases definite rigors have been noted, occurring from 30 minutes to 4 hours before the maximum temperature. These are minor compared with those induced by malaria or T.A.B. vaccine (given intravenously). Most of the cases had had treatment for dental sepsis and nasal sinus infection before the injections. In two cases focal reactions occurred in areas of sepsis for some days after injection—e.g., antra of Highmore which had previously given clear returns on irrigation again became mucopurulent. In one case—a general paralytic—definite herpetic vesicles appeared on the hands after the third injection. This patient had already had T.A.B. vaccine and malarial pyretotherapy. No bowel disturbance has been noted and vomiting—and even that mild—in only one case. Profuse sweating has been present in all the cases, the extent depending on the pyrexia induced.

ADVANTAGES.

No patient has been made worse, either mentally or physically. Abscesses have not appeared at the site of injection. Good pyrexial reactions follow, but their extent may be dependent on the patient, apparently on the activity of the thermogenic centre. Thus, one patient regularly had pyrexias of 105°

with malaria and gave the same response to colsul. Another, however, regularly gave poor pyrexias with malaria but much better with colsul. The pyrexias follow the injection, and there is no delay due to an incubation period. No additional disease is induced, nor are agents required to control it. Therefore a febrile state can be induced at any time of the year and the pyrexias can be timed as desired, and produced by intramuscular injection. The agent seems to cause a focal reaction in the areas of chronic sepsis. This latter reaction indicates its value and probable mode of action in the treatment of mental disorder.

My thanks are due to my medical superintendent, Dr. T. C. Graves, and to Mr. J. F. Ward, of British Colloids, Ltd., for help received and for the preparation of the material for control injection.

SULFOSIN THERAPY IN GENERAL PARALYSIS OF THE INSANE.

BY WILLIAM G. PATTERSON, M.D. EDIN., M.R.C.P. LOND., D.P.H.,

AND

S. R. L. SWITZER, M.R.C.S. ENG.,

ASSISTANT MEDICAL OFFICERS, CLAYBURY L.C.C. MENTAL HOSPITAL.

IN 19 cases of general paralysis of the insane we have administered sulfosin Leo—a 1 per cent. suspension of sulphur in olive oil—according to the method originated by Schroeder.[1] We employed this method without modification, and adopted the graduated dosage, beginning at 1 c.cm. and increasing by 1 c.cm. each time to a maximum of 10 c.cm.; in two of our patients the course was stopped at the seventh and the eighth injection respectively owing to increasing debility. We can record no such dramatic results as would justify the publication of full clinical records of cases observed for a maximum of only six months. But it seems desirable to record certain of our findings. We begin by tabulating the average maximum temperatures obtained in each case during the courses of sulfosin.

Case.		
1	..	102° F.
2	..	101·3° F.
3	..	102·3° F.
4	..	101·8° F.
5	..	101·7° F.
6	..	104° F.
7	..	102·5° F.
8	..	1st course, 101·6° F. 2nd " 101·7° F.
9	..	102·2° F.
10	..	101·7° F.
11	..	100·8° F.
12	..	102·2° F.
13	..	102° F.
14	..	1st course, 101·9° F. 2nd " 100·6° F.
15	..	1st " 101·6° F. 2nd " 100·5° F. 3rd " 101° F.
16	..	1st " 101·2° F. 2nd " 100·7° F.
17	..	1st " 102° F. 2nd " 100·9° F.
18	..	1st " 101·7° F. 2nd " 100·9° F.
19	..	1st " 102·1° F. 2nd " 100·5° F.

Serological tests were made at the Maudsley Hospital, and the results of the Wassermann reactions are given in five increasing strengths as follows:—Blood: +6, +7·5, +10, +15, and +30. Cerebro-spinal fluid: +2, +3, +6, +15, and +30.

On the whole the following table shows little serological change immediately after sulfosin therapy in 19 cases, of whom 13 had a single course, 5 two courses, and 1 three courses. Schroeder, despite his general dictum that the serological changes may not become manifest until a considerable time after the course of sulfosin, gives details of case after case in which very marked serological changes developed during, or apparently immediately after, a single course of sulfosin. He also describes most rapid and dramatic clinical results in the majority of his patients. Our results, both clinical and serological, are comparative failures.

[1] Schroeder, K.: THE LANCET, 1929, ii., 1081.

B.W. = blood Wassermann. C.S.F.W. = cerebro-spinal fluid Wassermann. C.S.F.L. = cerebro-spinal fluid Lange. S. = course of sulfosin. S+s+b = course of sulfosin synchronous with course of sulfarsenol and bismuth. — = Not done.

Case.	—	B.W.	C.S.F.W.	C.S.F.L.	Previous treatment.
1	Before S.	+30	+30	5555432100	Nil.
	After S.	+30	+30	5554321100	
2	Before S.	Neg.	+ 6	4443310000	Nil.
	After S.	+30	+ 3	3332210000	
3	Before S.	+30	+30	5555543210	Nil.
	After S.	+10	+ 6	5543210000	
4	Before S.	+30	+ 6	4322110000	Course of bismuth
	After S.	+15	+ 3	Neg.	
5	Before S.	+30	+30	5555432100	Course of sulfar-
	After S.	+15	+ 6	55443210000	senol and bismuth.
6	Before S.	+30	+ 6	5554432100	Induced malaria.
	After S.	+ 7·5	+15	5543211000	
7	Before S.	+30	+30	5554320000	Induced malaria.
	After S.	+30	+15	4433210000	
8	Before S.	+30	+15	3332210000	Induced malaria.
	After S.	+30	+ 6	Neg.	
	After 2nd S	+10	+15	Neg.	
9	Before S.	—	Neg.	5544321000	Induced malaria;
	After S.	+15	+ 6	5555432100	course of sulfar- senol and bismuth.
10	Before S.	+15	+30	555543210	Induced malaria;
	After S.	—	+30	5544321000	course of sulfar- senol and bismuth.
11	Before S.	—	+30	5544321000	Induced malaria;
	After S.	+30	+30	5555432110	course of sulfar- senol and bismuth.
12	Before S.	—	+15	5555543210	Induced malaria;
	After S.	+30	+15	55543211000	course of sulfar- senol and bismuth; second course of bismuth.
13	Before S.	—	+ 6	5555321000	Induced malaria;
	After S.	+ 7·5	+15	5544321000	course of sulfar- senol and bismuth; second course of bismuth.
14	Before S.	+30	+30	5555555421	Nil.
	After S+s+b.	+30	+30	5555543210	
	After 2nd S	+30	+30	0122322100	
15	Before S.	Neg.	+15	3345543210	Nil.
	After S+s+b.	—	+15	5554432100	
	After 2nd S	+15	+15	4432100000	
	After 3rd S	Doubtful.	+15	2221100000	
16	Before S.	+30	+30	5555554321	Nil.
	After S+s+b.	+15	+15	5555432100	
	After 2nd S	+30	+30	5555544321	
17	Before S.	+15	+15	5555543210	Antiluetic, details
	After S+s+b.	+15	+ 3	4432110000	not known.
	After 2nd S	+ 6	+ 3	4433211000	
18	Before S.	+30	+ 6	5554432100	Induced malaria.
	After S+s+b.	+15	+ 6	4432100000	
	After 2nd S	+10	+ 3	5443210000	
19	Before S.	—	+15	5555543210	Induced malaria;
	After S+s+b.	—	+ 6	5554310000	course of sulfar- senol; course of
	After 2nd S	+30	+30	5554432100	tryparsamide.

The justification of this early report is that we consider all weak links in sulfosin therapy, the value of which is still sub judice, should be detected and eliminated as soon as possible; and our main purpose is to point out a possible weak link. Schroeder's paper gives the impression that the typical pyrexia in his cases after each dose of sulfosin was 104° F. or 105° F.

"It is important to know the maximal temperature

attained, as the dosage of the injections is dependant on this, since the aim is a rise of temperature to about 104° F. or more. One begins with a small test dose (1 c.cm.) and increases the dose by 1 c.cm. up to 10 c.cm., as the temperature will increase with the increase of the dose. The next injection is given when the temperature has fallen to normal—usually after 24 hours—so the injection is given about twice a week."

In our series, however, the typical pyrexia was not 104° or more, but 101° or 102° F.; pyrexias of 105° and 104° did occur, but only once and ten times respectively in about 250 injections; moreover, as Case 6, in his single course of sulfosin, provided the 105° pyrexia and six of the 104° pyrexias, the proportion of high temperatures in the other 18 patients was even lower than the first figures imply. Whatever the value of sulfosin may be in general paralysis, it is conceivable that this value depends on the height of the pyrexia produced by each dose; we therefore suggest, as Schroeder himself has proposed already, that in sulfosin therapy one should aim at securing in each patient consecutive pyrexias of 104° or 105° F., such as occur in induced malaria. Our experience is that the recommended ten-dose course of sulfosin, beginning at 1 c.cm. and increasing 1 c.cm. at a time to 10 c.cm., fails to produce such pyrexias, not in the isolated atypical case but in the great majority of cases.

We wish to thank Dr. G. F. Barham, medical superintendent of Claybury Mental Hospital, for permission to carry out and publish this research, and we also acknowledge our great indebtedness to the staff of the Maudsley Hospital laboratory, where the numerous serological examinations were performed.

CLINICAL AND LABORATORY NOTES

A CASE OF PITUITARY CACHEXIA.

By Jane W. Stocks, M.B. Glasg.,

ASSISTANT MEDICAL OFFICER, HOLLYMOOR MENTAL HOSPITAL, BIRMINGHAM.

The following case is of interest for the extreme mental apathy and muscular atonia which are probably referable to a disordered pituitary gland. Such syndromes are, in varying degrees, common in mental hospitals. The association with pituitary disturbance is substantiated by its resemblance to published cases of pituitary cachexia (one of which had an abscess separating the anterior lobe of the pituitary gland from the posterior lobe). The Joint Board of Research for Mental Diseases, Birmingham, have found post mortem, large masses of colloid in the pars intermedia of the pituitary in many cases of mental disorder.

THE CASE RELATED.

The patient, a single woman, aged 33, was admitted on Jan. 18th, 1928. She had had several attacks of influenza before an operation in May, 1919, for removal of a cystic diseased ovary; after this operation she had been almost continuously in bed until her admission here. She was stated to be suffering from "neuritis and neurasthenia" during that period and had psycho-therapeutic treatment. In February, 1927, she had two attacks of influenza and in April, 1927, her father was accidentally killed. From then on there appeared to be an exacerbation of the symptoms, her condition became progressively worse, she became very emaciated, refused her food, and said she wanted to die.

There was no case of psychosis in the family history. The patient had been at school until the age of 14, reaching standard VII., and had subsequently worked in a factory.

Mental state on admission.—She was dull and apathetic, but suspicious and determined as far as was in her power to resist nursing attention. She had visual and auditory hallucinations; she stated that she "saw dreadful faces," that "something had happened to her" and that "this altered everything"; she felt "she had no head"; voices told her not to eat her food, people sneered at her and misjudged her; she thought she was ill and could not get well but would not die. She had previously threatened to kill herself by hanging and by drowning.

Physical state on admission.—She was extremely emaciated, weighing only 4 st. 10 lb., about half her average weight (Fig. 1). Her muscular system was almost completely atonic with the exception of the muscles of mastication, which were in spasm, great difficulty being experienced in opening her mouth for feeding purposes. Her extremities were cyanosed; the deep reflexes were increased and there was bilateral ptosis, dental caries, and gingivitis. Menstruation had been regular until nine weeks before admission, since when it had been in abeyance.

Course.—For many weeks the patient lay in bed in a state approximating to that of a catatonic stupor. On account of the septic condition of her mouth she was given anti-streptococcal serum daily in increasing doses for a week, the last dose being 50 c.cm. She showed no interest whatever in her surroundings and had to be forcibly fed; the muscular system remained completely atonic, there was no control of the sphincters, and the temperature was subnormal, varying between 96° and 97·6° F., the average being below 97°. The Wassermann reaction was negative. The mental and physical condition slowly deteriorated until March 11th, 1928, and the weight fell to 4 st. 5 lb.

Fig. 1.

Showing extreme emaciation of the patient on admission to hospital.

On account of the atonic condition and suspected pituitary disturbance, the patient was given 1 c.cm. of pituitrin twice daily from March 11th, 1928, till June 26th, 1928 (once daily during the latter part of the time). She now showed a decided improvement in the muscle tone and general circulation and some signs of interest in her environment, and would take her food without resistance from a particular nurse. Her eyes were fixed and staring and she was unable to close them, even when stimulated by a bright light or a loud noise or by sudden movement of the hand over her face. On August 7th, 1928, two septic teeth were extracted by Mr. T. Yoxall, and similar dental treatment was carried out at monthly intervals until a complete clearance was effected. She continued to improve, and on Sept. 15th, 1928, she was able to sit up in a chair. She could reply to questions by monosyllables only after a long latent period, but her face was mask-like and her hair was limp and lustreless.

Gradually improvement took place and she was able to perform simple movements. She could hold a spoon, and when taught to feed herself continued the act in an automatic manner, not, however, stopping

when the plate was empty or even removed. During this period she was unable to accommodate for near vision; she exhibited a curious affection of locomotion, being able to walk when assisted to start but unable to accelerate, retard, or make even a slight turn. In this state she walked into the wall or any obstacle. By Christmas, 1928, she began to show a little more interest in her surroundings, although it was not for another six months that she was able to move her eyelids voluntarily. Menstruation returned in February, 1929, and by the end of May muscle tone had improved sufficiently to enable her to pick up a pencil. It was not until the end of June that she could approximate thumb and index-finger, and the grip was still weak; by the end of July she could approximate thumb and little finger and her grip became quite good. She continued to improve, the last noticeable return of voluntary movement being that of rising from a sitting position. Previously she could not initiate this process until her arm was touched.

FIG. 2.

Showing the stuporose condition of patient before treatment contrasted with her appearance on recovery.

She was discharged recovered on Nov. 14th, 1929. At that time she was able to carry on a conversation with normal intelligence without psychomotor retardation. She had insight into her illness, helped in the ward, could carry piles of plates without mishap, took an interest in her environment and in the social events of the hospital, could dance well, and was able to write a sensible well-penned letter on Sept. 23rd, 1929. Her facial tone, mobility, colour, stance, and carriage of body were that of a normal person and contrasted to an extraordinary degree with the atonic stuporose condition in which she had so long existed (Fig. 2).

COMMENT.

Pituitary cachexia, as described by Simmonds in a case of necrosis of the anterior pituitary by a septic embolus, showed the clinical features of cachexia, senility, loss of pubic and axillary hair, and general nervous disturbances. Thirty-four such cases have been described up till the year 1928. Amongst the various symptoms ascribed to the condition this case presents a parallel in the following:

(1) Cachexia; from a normal of 8 st. 8 lb. her weight dropped to 4 st. 5 lb., and later rose to 9 st., a difference of 65 lb. (maximum published, 110 lb.: Simmond's case). (2) She presented a wrinkled, senile appearance. (3) Pubic and axillary hair were definitely scanty. (4) General nervous disturbance was severe, necessitating her certification and admission to a mental hospital. (5) Trophic vaso-motor skin disturbances were a marked feature; there was extreme cyanosis of the extremities and bedsores were threatening on admission. (6) The skin was dry, rough, and scaly. (7) Muscular weakness was extreme. (8) She had a subnormal temperature, ranging between 96° and 97·6° F. (9) Her blood pressure was obviously very low, the systolic pressure being roughly estimated at 90 mm. (10) Gastric disturbance was shown by the persistence of undigested food (as evidenced by stomach washings before a tube feed) for 18 hours or more. (11) Her basal metabolism was 89 per cent., 91·3 per cent., 93·6 per cent. on three occasions whilst asleep in the respiration chamber of the Joint Board of Research. (12) Mental torpor and apathy were a distinct clinical feature. (13) Menstruation ceased nine weeks before admission and returned 15 months later when she was recovering. (14) The improvement after injection of pituitary; this has given excellent results in the published cases.

My thanks are due to Dr. T. C. Graves for permission to publish this case.

EXPULSION OF AN ECTOPIC FŒTUS PAPYRACEUS

AFTER UTERINE CURETTAGE

BY KENNETH MCFADYEAN, M.R.C.S. ENG.

THE following case of ectopic papyraceus fœtus occurred in my practice last year; it is an example of a very rare condition.

A multipara, aged 34, with three children, the youngest of whom is aged 4, appeared to menstruate normally on Sept. 24th, 1929. On Dec. 15th, 82 days later, she had severe uterine hæmorrhage accompanied by sickness, slight fever, and acute abdominal pain on the left side. A practitioner who examined her expressed the opinion that she was pregnant, that the pregnancy had not been interfered with, and that it would probably pursue its normal course. During the first week of January, 1930, there was further very slight hæmorrhage. On Jan. 14th a bi-manual examination was made, and the uterus was found to be about the size of a three months' pregnancy. At this time the patient stated that she no longer felt pregnant. A week later there was further slight hæmorrhage. On Jan. 27th there was a small quantity of brown discharge. Examination revealed no alteration in the size of the uterus. Surgical interference was advised.

On Feb. 1st dilatation and curettage was performed, a tent having been introduced the previous evening. A sound was first passed and appeared to enter an empty uterine cavity 3 inches in length. After dilatation a finger was introduced, and the cavity carefully examined. The patient was thin, with a lax abdominal wall, so that bi-manual examination was easy. There was an indefinite mass to the left of the uterus, the latter being distinctly globular in shape and freely movable. Nothing was felt in the pouch of Douglas or in the uterine cavity except, in the latter, a very soft, easily separated lining which was thicker in the upper part on the left side. The entire wall of the uterus was freely scraped with a blunt curette; hæmorrhage was severe and could not be checked by hot douching. The cavity was packed. Subsequently the patient was given injections of half a cubic centimetre of pituitary extract six-hourly. Microscopically the scraping showed a decidual reaction.

On Feb. 2nd, at 11 A.M., the temperature rose to 103° F. and the pulse-rate to 132, while the patient had a rigor and severe abdominal pain on the left side. The uterine packing was removed without hæmorrhage. Pain persisted all day and night. On Feb. 3rd, at 10 A.M., the temperature was 102° F. and the pulse-rate 120; a fœtus was expelled. The umbilical cord was wound tightly three times round the neck, while the proximal end was attached to a retained placenta. At 6 P.M., after further severe pain in the left

side of the abdomen, the placenta was expelled. The temperature fell to 99° F. and the pulse-rate to 98. The placenta, with some retro-placental blood clot, formed a firm cylindrical dry mass just under 4 inches in length and 1¼ inches in diameter at its widest part. The patient made an uneventful recovery and has menstruated normally since.

The fœtus was examined by Dr. Audrey Russell, of the Institute of Anatomy, University College, London, who has kindly furnished the following report: (1) Gross anatomy: Maceration had proceeded to mummification. The neck, extremely thin, showed a circular furrow, caused by the umbilical cord. The general development was that of a three months' embryo. (2) Radiogram: The vertical column in the cervical region showed great disturbance, with suppression of some of the centres of ossification. The centres of ossification were present in all the metacarpals, first phalanges and terminal phalanges in the hand, and in the metatarsals and terminal phalanges in the feet, indicating an age of about 83 days. The ends of the long bones show a line of arrested growth, suggesting that the embryo had had a precarious existence for a week before death. (3) Umbilical cord: 14·5 cm. long, was under one-eighth of an inch wide and flattened. Much of Wharton's jelly had been absorbed. The placenta showed advanced post-mortem degeneration, while a large retro-placental blood clot had been partially organised.

The conclusion from these data is that the pregnancy was isthmial, and that the fœtus died on Dec. 15th, being 82 days old, and was retained until the date of operation seven weeks later.

AN UNUSUAL ROUTE OF INFECTION IN CHOLECYSTITIS.

By R. Rutherford, F.R.C.S. Eng.,
Surgical Registrar, King's College Hospital, London.

Much has been written and much labour has been expended on discovering the various ways in which the gall-bladder may become infected. Undoubtedly in the vast majority of cases infection is carried by the blood stream. It may be useful, if merely to cite an exception to the general rule, to place on record the following interesting case.

Fig. 1.

Van Gieson preparation showing excessive fibrosis in the gall-bladder wall in the vicinity of the adherent vermiform appendix. (× 35.)

The patient, a stout, unmarried female, aged 27 years, had complained of pain in the gall-bladder region for some months. She also complained of indigestion, flatulence, and constipation, and occasional pain in the right shoulder region. She had not suffered from vomiting or jaundice.

On physical examination tenderness under the right costal margin was elicited, but no tumour could be felt. A cholecystogram was done, and the gall-bladder was found to fill with the dye, and the radiogram, after a fatty meal, showed normal emptying of the viscus. The temperature and pulse-rate were normal. No stones were seen. A diagnosis of cholecystitis was made.

Fig. 2.

One of the papillary processes of the mucous membrane, highly magnified (× 190), taken from the vicinity of the adherent appendix. Note the vascular engorgement, the pavementing, and the commencing diapedesis.

An operation was performed, and the gall-bladder was seen to have lost its normal bluey appearance, and to be the seat of inflammation. In apposition with the gall-bladder were the cæcum and an inflamed appendix. Cholecystectomy and appendicectomy were performed, and the patient made an excellent recovery.

About the ninth week of intra-uterine life, the mid- and hind-gut assume their cœlomic position by retreating at the site of the future umbilicus, the hind-gut being the last portion to return. The cæcum comes to rest just below the liver, and rotation takes place. The transverse colon and descending colon come into being as anatomical entities, and the cæcum undergoes a relative displacement to its final resting place in the right iliac fossa; thus an ascending colon is formed.

In the case just cited the early fœtal position of the cæcum had been maintained, but the cæcum and the appendix were of the normal adult type. An ascending colon consequently did not exist.

The mode of infection was not apparent until sections were made of the whole gall-bladder wall. It was then observed that the serous and muscular coats had borne the brunt of the infection, and that the mucosa had almost entirely escaped. The section stained by the van Gieson method (Fig. 1) showed that fibrous tissue had been laid down in the muscle coat, and there was a dense fibrosis outside it. The blood-vessels were engorged; pavementing in their lumen and diapedesis had commenced (Fig. 2). A few polymorphonuclear and plasma cells were seen, particularly round the vessels. The mural vascularity was most marked in one segment of the section; it

was also at that point that the inflammatory cells were most in evidence, and relatively higher vascularity was also marked beneath the mucosa. This segment was regarded as the part of the viscus which was most nearly in apposition to the inflamed appendix (Figs. 1 and 2).

The section shows well the frond-like arrangement of the mucosa. Some of the processes have extremely slender stalks, and it needs no vivid imagination to picture one of them bending under a weight of imprisoned cholesterol to the breaking point, and forming the nucleus of a cholesterol stone. Here is an example of a case in which slight inflammation may just disable the gall-bladder and render it unfit for the normal cholesterol metabolism.

The appendix in section was seen to be the seat of a chronic inflammatory process, as evidenced by the fibrous thickening of its walls, the vessels being injected and the lymphatics infiltrated with inflammatory cells, showing the superposition of a recent inflammation.

I am indebted to Mr. C. P. G. Wakeley for permission to publish this case, and for the use of the excellent microscopic slides and drawings.

REVIEWS AND NOTICES OF BOOKS

Reins.

Nouveau Traité de Médecine. Vol. XVII. By FERNAND WIDAL, Professor of Clinical Medicine in the University of Paris; A. LEMIERRE, Associate Professor in the same University; PASTEUR VALLERY-RADOT. Paris: Masson et Cie. Pp. 1024. Fr.125.

Œdema of Bright's Disease.

By CH. ACHARD, Member of the Institute, General Secretary of the Academy of Medicine, Professor of Medicine in the University of Paris. Translated by MAURICE MARCUS, M.B., B.S.Lond. London: Kegan Paul, Trench, Trübner & Co., Ltd. 1930. Pp. 231. 9*s*.

Hypertension and Nephritis.

By A. M. FISHBERG, M.D., Physician, Mount Sinai Hospital, New York City. London: Baillière, Tindall & Cox. 1930. Pp. 566. 30*s*.

IT is a matter of common knowledge amongst students and medical men that as a rule books on nephritis do not serve to diminish the confusion prevalent on this difficult subject. It is therefore gratifying that in one season three books of outstanding merit should appear, any one of which is calculated greatly to increase the knowledge of any careful reader.

The 17th volume of Masson's System of Medicine deals with renal disease. It was about to appear when the medical profession in France suffered the loss of its principal author, the late Prof. Fernand Widal, who was also one of the general editors of the whole System. The work contains in its thousand pages the fruits of the lifetime of observation and research which this great physician had devoted to medicine, particularly to the diseases of the kidney. When he died, it was curious that his contributions to general bacteriology received most praise abroad, at any rate in this country; in France his name is renowned mainly for the magnificent work which he devoted to renal disease. A captious reader may find in this massive volume too much special pleading; the authors have indeed stated the case in favour of salt retention in nephritis with a force which many modern pathologists and physicians might consider exaggerated, but at a time when the views of Widal on this subject are being critically re-examined it is satisfactory to have those views expressed in clear and complete terms. The volume is valuable, moreover, for its lucid exposition of many of those first principles of biochemistry and of the essentials of morbid anatomy, without which no one can properly undertake a study of renal disease. The subject matter is arranged logically, and the illustrations, some of which are in colour, are adequate. The book is not confined to nephritis, but contains sections dealing with tuberculosis and syphilis of the kidney, renal calculus, malignant and parasitic diseases of the kidney, and the various abnormalities of the urine commonly encountered in medicine.

Prof. Achard is well known in this country for his critical work on œdema and the work now published in English by the Anglo-French Library of Medical and Biological Science is a notable addition to the literature. Prof. Achard writes clearly and has a breadth of outlook which makes his views on œdema in Bright's disease of great educational value. The discussion of salt retention on page 135 could scarcely be bettered, and the section dealing with the colloids of the blood and the theories of oncotic pressure are admirable. The book will not, perhaps, make a wide appeal but no one who is endeavouring to master the complex problem of œdema can afford to ignore it, and no one who appreciates the difficulties of the subject can fail to admire the skill with which the author has displayed the facts. The translation throughout is well done; we have detected only one bad slip, where (p. 219) the sodium ion is referred to by the word "Nation."

Lastly, an adequate survey of the whole subject of nephritis is contained in Dr. Fishberg's book. This American author is best known in England by his work on blood pressure; he deals here with an even more complicated aspect of medicine. The key chapter to the work is XI., where the classification of Bright's disease is fully considered. Starting with a historical survey of the position before and during the epoch of Richard Bright, Dr. Fishberg discusses the classification, still prevalent in certain text-books on renal disease, into parenchymatous and interstitial varieties. After quoting the views of Wilks and of Gull and Sutton, and of their successors in Germany, he points out that this classification is now indefensible and should no longer be taught to students. He proceeds to discuss the functional classification of Bright's disease into supposed nitrogen-retaining and chloride-retaining types, and again is able to demonstrate the irrational nature of such a division. Finally he adopts as a classification acceptable in the present state of our knowledge one which is essentially similar to that of Volhard and Fahr, which placed true inflammatory nephritis midway between the degenerative nephroses at one end and the ischæmic affections of the kidney at the other. The book as a whole supplies a clinical, experimental and pathological demonstration which justifies this classification. The views here expressed are those of a small but instructed body of physicians, representatives of whom are to be found throughout the world. When, indeed, the accumulated wisdom which is to be found in the three books now under review filters into the text-books, medicine will have made a great advance.

A System of Bacteriology in Relation to Medicine.

By Various Authors. Vol. V. Pp. 420. London: H.M. Stationery Office. In 9 volumes. £8 8s. or £1 1s. per volume.

THE fifth volume of the System of Bacteriology published by the Medical Research Council comprises sections on the pfeifferella (*B. mallei* and *B. whitmori*), the corynebacteria (*B. diphtheriæ* and the diphtheroids), the acid-fast group (*B. tuberculosis*, Johne's bacillus, the leprosy bacillus and the non-pathogenic acid-fasts), the brucella (*B. melitensis*, *B. paramelitensis*, and *Br. abortus*), anthrax, the non-pathogenic spore-bearing bacilli, *B. tularense* and bartonella and allied organisms.

The volume reaches the same high standard as its predecessors. Of the earlier portions of the book special mention may be made of the sections by Prof. R. Tanner Hewlett on *Corynebacterium diphtheriæ* and the diphtheroid organisms, particularly the portions dealing with laboratory diagnosis in diphtheria, and the section on the modern work with the Schick test. We wish that everybody concerned with the diagnosis of diphtheria would read the section on the laboratory diagnosis. There is hardly any branch of bacteriology where so much slipshod rule-of-thumb work is done as in the diagnosis of diphtheria, and the whole section, from the collection of material to the virulence test at the end, is a practical commonsense presentation of the subject. Prof. Hewlett writes with moderation on the relationship of the avirulent to the virulent diphtheria bacillus, about which there is much conflicting evidence. The section closes with a long description of the diphtheroids, including *C. hofmanni*, *C. xerosis*, *C. acnes*, and some of the lesser known diphtheroids producing disease in animals.

Nearly half the book is occupied with the acid-fast group of bacteria, of which 175 pages are devoted to the tubercle bacillus itself in all its bearings. In this section Dr. Stanley Griffith writes on the morphology and cultivation of the tubercle bacillus, experimental tuberculosis, and the distribution of the bacillus in man and in animals. This piece of work summarises the labour of many years. Dr. Griffith gives a fair summary of the vexed question of the filtrable form of the tubercle bacillus and discusses eugonic, dysgonic, and atypical strains of a bacillus—a subject on which his long research qualifies him to speak with authority. His chapter on tuberculosis in man includes an account of the portals of entry and a summary of work on the bovine bacillus in man. He also contributes a chapter on tuberculosis in cold-blooded animals, which contains much information not readily accessible elsewhere in English text-books. The section on allergy and immunity in tuberculosis by Dr. W. H. Tytler is very good. He gives a comprehensive well-reasoned survey, in the space of 50 pages, of a very difficult subject, and supplies a valuable bibliography. This section is indeed almost a complete monograph in itself. A short article on the preparation and standardisation of tuberculin by Dr. C. C. Okell brings together work on this complicated subject which has hitherto been scattered in journals and League of Nations reports. It is regrettable that more space was not allotted to the laboratory diagnosis of tuberculosis. For example, to dismiss in less than four lines the difficult task of finding the tubercle bacillus in pleural fluids is not helpful. The provision of a short chapter on the chemistry of the tubercle bacillus and other acid-fast bacteria, covering the ground of the first four chapters of Wells, De Witt, and Long's book on this subject, would have been valuable. In the section on chemotherapy in tuberculosis Prof. S. Lyle Cummins gives an excellent account of sanocrysin, and his last two paragraphs at the end sum up its possibilities with impartiality.

The article on leprosy by Dr. Ernest Muir, of Calcutta, is a useful summary which includes modern work on the cultivation of *B. lepræ* and brings the subject up to date. Dr. J. T. Duncan, Dr. L. E. H. Whitby, and Dr. A. D. McEven deal with the brucella group of organisms. Much new work has been published on this group during the last few years, especially on *Br. abortus* infection in cattle, the authors have made full use of the available material and have supplied a good bibliography. Prof. J. C. G. Ledingham contributes a chapter on tularæmia which includes an account of *B. tularense*, one of the latest arrivals in pathogenic bacteriology.

To every section of the volume Prof. W. Bulloch has contributed pithy historical introductions which supplement the long historical essay by him which appeared in the first volume of the System.

Injuries to Joints.

Third edition. By Sir ROBERT JONES, Bart., K.B.E., C.B. London: Humphrey Milford, Oxford University Press. 1930. Pp. 192. 6s.

THIS little book first appeared during the war and achieved an immediate popularity amongst those who were called upon to handle battle casualties. But, unlike most primers of that period, the book has continued to make appeal in civil practice. In the third edition nearly all war references have been deleted, and the principles of treatment are applied to everyday practice. Apart from these changes the only important addition is a few pages on Volkmann's ischæmic contracture, a subject much discussed at medical meetings and in the scientific press in recent years. The author has wisely preserved the character and size of the book and has not increased the number of pages. It is a handy pocket size and is not overburdened with detail; it can be read in a few hours and provides a useful and authoritative guide in the treatment of joint injuries.

Physiological Principles of Hydrology.

By R. G. GORDON, M.D., D.Sc., F.R.C.P.E., Physician to the Royal Mineral Water Hospital, Bath, and to the Bath, Somerset and Wilts Orthopædic Hospital; and F. G. THOMSON, M.A., M.D., F.R.C.P., Physician to the Royal United Hospital, Bath. London: Jonathan Cape. 1930. Pp. 131. 5s.

THIS is a short and readable book by two practising spa physicians. The authors have set out to write something which may help the practitioner to decide himself whether hydrotherapy will be likely to benefit his patients. Chemical formulæ have been avoided and an attempt has been made to give a physiological explanation of the action of waters. They hope that the reader may realise that hydrotherapy has its own special place in treatment, that the action of waters depends more on their physical than on their chemical properties, and that a cure depends on the power of the remedy to alleviate the underlying cause of the disease.

The first chapter contains an excellent short historic account of hydrology from Hippocrates up to the present day. Then follow four chapters on

physiology in its relation to medical hydrology. On the whole this is the least satisfactory part of the book. It would certainly be much improved if the references were supplied at the end of each chapter, so that the reader might know the authority on which the various statements are based. A few mistakes occur. Thus on page 32 thyroid deficiency is stated to be accompanied by a decrease in the respiratory quotient when the authors evidently mean the respiratory exchange. Again, they state that any method that will remove carbon dioxide from the body will increase oxidation and so prevent the formation and decrease the existing amount of fat in the body. The easiest way to remove carbon dioxide is to perform forced respiration; but there is no marked increased oxidation under these circumstances, only an alkalosis. On page 54 it is stated that in a hot immersion bath breathing becomes deeper and more rapid with a corresponding increase from 50–100 per cent. in the intake of oxygen and the elimination of CO_2. These statements rather suggest that the increased metabolism follows on the increased pulmonary ventilation, whereas it is almost certain that the opposite is true. Over 20 years ago Sutton showed that a rise of body temperature was accompanied by an increase in the respiratory exchange. However, the pulmonary ventilation is probably in excess of that required to eliminate the extra CO_2 produced and so there is an increased alkalinity of the blood and of the urine. This sequence of events is not expressed clearly in this book. The last chapters are certainly the most successful. In Chapter VI. there is a particularly valuable list of places in this country, in Europe, and also in Egypt where different types of waters are found Chapter VII. gives a good account of the various kinds of baths, while Chapter VIII. deals with the diseases which are commonly treated at hydrological stations.

Radiologie clinique du tube digestif: œsophage, intestin, foie et glandes annexes.

By J. GATELLIER, Professeur agrégé à la Faculté de Médecine de Paris, Chirurgien des Hôpitaux de Paris; F. MOUTIER, Chef de Laboratoire à la Faculté de Médecine de Paris; and P. PORCHER, Chef de Laboratoire de Radiologie à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1930. Vol. I. Pp. 176. Vol. II. Pp. 389. Fr.330.

THESE two volumes are in continuation of a series of radiological atlases, other volumes of which we have already reviewed. Those hitherto published deal with the normal and pathological osseus system, the stomach and duodenum. The present volumes continue the alimentary tract and illustrate the normal and pathological œsophagus, the small and large intestines, and the accessory organs of digestion—the salivary glands, the liver, the gall-bladder, the pancreas, and the spleen. The system of explanatory line drawings adopted in the previous volumes of the series has again been used, and is a very helpful way of interpreting the radiograms. We have described this series as an atlas, but it is really more than this. In addition to the explanations of the radiograms, a considerable amount of text is included in each volume. All the conditions dealt with are well described, and an account of the pathology is given, besides full notes on the radioscopic and radiographic examination of the organs. The work is very complete, and every condition that it is possible to examine radiologically appears to have been included. The descriptions and illustrations of the large intestine are particularly well done.

The volumes will be useful, both as books of reference and as an easy source of typical examples of recognised radiological appearances.

Development of Sex in Vertebrates.

By F. W. ROGERS BRAMBELL. London: Sidgwick and Jackson. 1930. Pp. 261. With 24 plates and 25 text-figures. 12s.

Dr. Brambell's book deals with two subjects which, while distinct, are in many ways closely related: (1) the phylogenetic evolution of the sex apparatus, gonads, and sex cells; and (2) the determination of sex in the individual. He weaves together classical morphology and experimental physiology into a very clear account of a branch of knowledge which has made enormous advances in the last 10 or 15 years, and the whole will be best appreciated if the last chapter is read first. The account of sex chromosomes and sex reversal is of particular interest, and the apparent contradiction between the chromosomal theory and the facts of reversal seems to have been satisfactorily settled.

Die seelischen Heilmethoden des Arztes.

By Dr. MAX LEVY-SUHL, Berlin-Wilmersdorf. Stuttgart: Ferdinand Enke. 1930. Pp. 280. M.15.

FROM these pages, written for the practitioner and concerned with the treatment of the neurotic, it may readily be gathered that Dr. Levy-Suhl is not only thoroughly conversant with different psychopathological theories and psychotherapeutic methods, but applies with skill whichever he deems appropriate to his clinical material. Illustrative instances are furnished of the most diverse types of case, some treated by simple suggestion, some by hypnosis, some by analysis, some by combinations of technique. Attractive little appendices are given at intervals, dealing briefly yet instructively with theoretical questions as they arise in the course of practice. The volume serves a useful purpose and can be recommended for its eclecticism no less than for its breadth of view.

REPORTS AND ANALYSES

CONSTANTINO'S QUINA-PORT.

(PREPARED BY CONSTANTINO LTD., OPORTO.)
(SOLE AGENTS (WHOLESALE ONLY) J. AND G. OLDFIELD, LTD., 9, CHARLES-STREET, LONDON, S.W.)

THIS wine is described as "super tonic" and "rejuvenator," and is claimed to be made from pure old matured port, with which is incorporated quinine and other substances of a tonic character. When analysed the following results were obtained:—

	Per cent.
Alcohol by volume	19·5
equivalent to proof spirit	34·0
Fixed acidity, as tartaric acid	0·45
Volatile acidity, as acetic acid	0·03
Ash	0·27
Organic solids	13·38
containing glucose	11·50
and small amounts of quinine, &c.	

The wine is of a natural port colour and free from preservatives; the flavour is distinctly agreeable, and is modified but very slightly by the presence of quinine.

Such a product as this Quina-port merits the consideration of the practitioner, as the tonic character of the added medicaments and those natural to port wine are combined in an agreeable and palatable form.

THE LANCET.

LONDON: SATURDAY, AUGUST 16, 1930.

DRAINS.

THERE is no conviction which dies harder in the public mind than that the control of communicable diseases is a problem of drainage. Hardly a day passes which does not bring to a big health department some urgent message about drains, with expressions of anxiety as to the prospects of an epidemic. Recently a circular issued by a medical officer of health, in which it was pointed out that drains had nothing to do with diphtheria, was the subject of indignant protests by plumbers, both locally and in the *Plumber*. It is easy to see how this has come about. In the second quarter of the nineteenth century the problem of public health was to the public mind the eradication of cholera, and the Royal Commission on the Health of Towns and Populous Places and the work of CHADWICK and his co-labourers demonstrated forcibly the association between epidemic occurrences and the insanitary conditions of the places where people had congregated as the result of the industrial revolution. It became evident that the primitive water-supplies on which the people still depended were grossly polluted as the result of the equally primitive means of disposing of excrement; and there can be very little doubt that the disappearance of cholera and the almost complete abolition of the alimentary infections in modern communities is the result of the attention devoted since these days to sewage disposal and communal water-supplies.

It is not so clear why the faith thus engendered in the beneficent influence of good drainage should have extended to those communicable diseases which do not as a rule gain access to the human body by the alimentary route. Presumably it was due to an association of ideas and imperfect understanding of the modes of transmission of these diseases. It is mostly in relation to diphtheria or sore-throats in general that the public are still concerned about defects of drainage, and it must be admitted that the pronouncements of the medical profession and sanitarians have been largely responsible for this point of view. STEVENSON and MURPHY, in their book written in 1892, said: "The spread of diphtheria has been ascribed to the pollution of air by emanations from sewers, and certainly there is a close connexion between the sanitary condition of a district and the occurrence of this disease; the inhabitants of houses into which sewer gas enters are especial sufferers," and this was expressive of the belief generally held at that time by those who were responsible for the care of the public health. The nature of the infection and the conditions precedent to its propagation were not yet fully understood. The diphtheria bacillus had been described by LÖFFLER in 1884, its toxin separated by ROUX in 1888, the antitoxin produced by BEHRING and KITASATO in 1890 and 1893, and a commencement made with the treatment of diphtheria with antitoxin in Paris and Berlin in 1894. LÖFFLER himself had hinted at the presence of the bacillus in apparently healthy throats, and PARK, as the result of his investigations in New York, in 1893, suggested that probably 1 per cent. of the healthy throats in that city were infected. Since these discoveries were made there has been a gradual growth of knowledge on the transmission of infection, and we have come to realise that, at least so far as the air-borne infections are concerned, their epidemicity is a problem of mild infections and carrier states rather than of sanitary circumstances which can be controlled by any engineering works. We find, then, in modern text-books statements such as these: "When sewer air leaks through a defective fitting into the air of a house its noxious influence, if any, is further attenuated. There is no evidence that under such conditions it either causes specific disease or predisposes to it" (CURRIE). A slightly more cautious note is struck by JAMESON and PARKINSON, who say: "The continued inhalation of drain and sewer air has been thought to predispose to a general loss of health, e.g., anæmia, headache, vomiting, sore-throat, skin eruptions, and diarrhœa. Possibly only a reduced vitality is produced, which renders the individual more susceptible to bacterial infection." In the second edition of PARK'S "Public Health and Hygiene," published in Philadelphia in 1928, no mention whatever is made of drainage in the part devoted to diphtheria, and the only statement bearing on the subject is under the heading "General Municipal Sanitation," where, in relation to bad plumbing, it is said that "these conditions result in pipes and fixtures which leak and are a menace to health," which reads rather as a vague concession to former teaching than as a convincing pronouncement of modern views. ROSENAU (1927) says bluntly: "Formerly, imperfect drains and sewer gas were given as the cause of diphtheria; this is a fetish which dies hard." Finally, those who read Dr. HASLAM'S book on "Recent Advances in Preventive Medicine [1]" will find the following introductory comment which leaves no doubt about the change of outlook on the care of the public health. He says:—

> "Text-books and teachers have long combined to convey the impression that preventive medicine was the special province of those more interested in drains and damp-proof courses than in human ills, though the long held belief in the close connexion between drains and the infective fevers permitted the preventive doctor to concern himself with the latter. Nowadays it is hardly going too far to say that all medicine is preventive medicine."

Until recently most public health departments made the occurrence of communicable disease in a house an excuse for examining the drains, and no doubt this practice persists in many towns.

[1] J. and A. Churchill. 1930. Pp. 328. 12*s*. 6*d*.

The reason for its continuance is due to the fact that the law permits of drain-testing only if the responsible officers can establish reasonable grounds for suspecting that the drains are defective. In the absence of a case of fever it is rarely possible to find such evidence, yet in practice it has been found that the routine tests made at infected houses do discover very many defects of drainage, and their discontinuance would undoubtedly lead to a deterioration in the condition of house-drains. On general principles it is undesirable that anything which is offensive or objectionable or nauseating should be allowed to continue, and it is not surprising, therefore, that the health departments are reluctant to forego any opportunity of making these examinations. Until there is some amendment of the law, however, it is essential that the misleading educational influence of this practice should be counteracted by constant instruction of the public as to the truth concerning the transmission of disease. Practitioners of medicine are sometimes guilty of expressing obsolete views on this topic. Their great influence carries with it a responsibility for helping to guide the public away from the erroneous conceptions of infection which are so commonly held.

GALL-BLADDER DISEASE.

INQUIRY goes on into the causation of gall-stones and of inflammation of the gall-bladder. Clinical study and laboratory technique, especially Graham's cholecystography, have thrown light on the diagnosis and symptomatology of these conditions, but until we have a clearer understanding of their ætiology we can do little to prevent their occurrence. All are agreed that a large proportion of gall-stones have their primary origin in an infection of the biliary tract, although a certain number may be metabolic in origin, the best example of these being the pigment calculi found in acholuric family jaundice. In most cases, however, the two conditions—stone and inflammation of the lining membrane—are found together, leaving room for discussion as to which of the two occurred first. Mr. A. J. WALTON,[1] in a recent review in our columns, was strongly of opinion that the initial change is most frequently an inflammation which gives rise later to calculus formation. Even with a pure cholesterol stone, which has been generally regarded as metabolic in origin, WALTON found inflammatory changes in the gall-bladder in every one of his own 23 cases. What, then, are the factors which lead to infection of the gall-bladder and biliary passages? Clearly infection may reach the bladder (1) through the common bile-duct and the cystic ducts from the duodenum; (2) via the portal vein; (3) through the systemic circulation; or (4) by direct or lymphatic spread from the liver. As a result of his closely reasoned survey, WALTON leaned towards a blood-borne infection, at first a part of a general infection or mild septicæmia.

There are many clinical features to support this view, which is also in harmony with the experimental work of ROSENOW, WILKIE, and others, who have cultivated streptococci from the wall of the gall-bladder in a large proportion of cases examined in which the bile itself was sterile. ROSENOW has indicated the selective action of certain streptococci towards particular viscera, and such affinity would explain the localisation in the gall-bladder of organisms which have reached it by way of the systemic circulation. An important investigation by the Edinburgh school appears in our present issue. Dr. BRYAN WILLIAMS and Dr. D. G. S. MCLACHLAN have examined the bacterial flora of 106 gall-bladders removed from the living body on account of disease. In 84 cases of chronic cholecystitis in which the gall-bladder wall was examined under strictly controlled conditions, a streptococcus was found in 17 per cent. and the colon bacillus in 23 per cent. In the great majority of those cases in which a streptococcus was found, whether in the gall-bladder wall or in the cystic lymph gland, it was also present in the bile: only once was a streptococcus isolated from the bile in the absence of stone. Injection into rabbits of organisms derived from such infected human material was followed in only a small proportion of cases by a definite cholecystitis; thus, only one rabbit injected intravenously with streptococci and one injected with colon bacilli developed gross lesions in the gall-bladder. Hæmorrhages into the stomach were frequently found in these animals—an observation of some possible significance in relation to gastric ulceration in the human subject, although a number of other substances may lead to similar changes.

The majority of the streptococci isolated by WILLIAMS and MCLACHLAN were of the enterococcus type, suggesting derivation from the bowel. They do not conclude that any of the organisms isolated are necessarily the primary agents of gall-bladder inflammation; they may merely be secondary invaders. Their work, however, does not confirm the view that organisms usually reach the gall-bladder by means of the systemic circulation, nor does it support ROSENOW'S theory of elective localisation. Direct or lymphatic spread of infection via the liver may be of as great or greater importance. Prof. E. A. GRAHAM[2] has shown that some degree of hepatitis is an almost constant accompaniment of cholecystitis; it is also frequently found in such conditions as chronic appendicitis, though rarely of such extent as when associated with disease of the biliary tract. It would seem, then, that chronic infective processes in the area draining into the portal system may lead to a hepatitis which, in its turn, permits organisms which would normally be filtered off by the liver to pass into the gall-bladder, or give rise to a direct spread of infection from liver to gall-bladder wall. Mr. E. R. FLINT has recently directed attention afresh[3] to the frequent association of hepatitis with cholecystitis and with other intra-abdominal lesions, and an unusual case is discussed by

[1] THE LANCET, 1930, i., 334.

[2] Surg., Gynecol., and Obstet., 1918, xxvi., 521.

[3] Brit. Med. Jour., 1930, i., 1041.

Mr. R. RUTHERFORD in our present issue in which direct spread of infection from an abnormally situated appendix led to infection of the gall-bladder wall and cholecystitis. It would clearly be unwise to accept a blood-borne infection as the sole cause of cholecystitis to the exclusion of a lymphatic or direct origin.

MEDICAL RESEARCH IN INDIA.

IT is a relief to turn from the troubled waters of the Indian lay press to the quiet current of scientific work in India, which goes on undisturbed. The report for 1929 [1] of the Calcutta School of Tropical Medicine, with the associated Hospital and Institute of Hygiene, shows that here, at all events, Europeans and Indians are working harmoniously for the good of humanity, and the most impassioned patriot cannot but admit that his countrymen are getting a fair chance. Of the nine professors and lecturers in the various departments five are Indians, while the posts of assistant professors, where they exist, are all held by medical men native to the country. The Director is known to search for indigenous scientific merit, and to welcome any sign of it most cordially. Colonel J. W. D. MEGAW, late head of the school, has been appointed Director-General of the Indian Medical Service, and has been succeeded by Lieut.-Colonel H. W. ACTON, who makes of his first report an opportunity not merely to describe the year's work, but to survey over a longer period the advances in tropical medicine with which the school has been specially concerned. It is an impressive record, involving important contributions to our knowledge of some of the worst scourges of warm climates.

Colonel ACTON remarks that the name of LEONARD ROGERS, who founded the school, is associated with revolutionary changes in the treatment of four of these scourges—amœbic dysentery, cholera, kala-azar, and leprosy, and it is not significant that he made use of drugs which had previously been employed. Amœbic dysentery had been treated for many years by ipecacuanha, but it was left to ROGERS to show that emetine, which later observers had prided themselves in removing from the crude drug, was really the important factor, and to demonstrate that it could be administered hypodermically with advantage. Similarly, saline injections had been given for cholera, but a laborious investigation was needed before the superiority of the hypertonic solutions was admitted. Treatment with the hydnocarpus compounds, introduced again by ROGERS, has changed the whole outlook in leprosy, and lastly, his employment of intravenous injections of sodium antimony tartrate for kala-azar led the way to the reduction in the mortality-rate of that disease which is perhaps the most striking recent result of the activities of the school. This pioneer work is most generously recognised in the report. It has to be remembered, also, that much remained to be done, and for that, and for developing the work in the directions indicated by ROGERS for a large amount of original work on other aspects of tropical medicine, Colonel ACTON and his collaborators deserve credit. One of the interesting recent activities mentioned in the report is the research on bacteriophage, initiated at the visit of Dr. D'HERELLE in 1927. Dr. D'HERELLE worked in the school for several months, and evidently imparted a full share of his enthusiasm to his colleagues there. The whole question of the use of bacteriophage is still sub judice, but Colonel ACTON is evidently impressed with their possibilities, not only as regards treatment, but also in throwing light on the bacteriology and epidemiology of cholera and dysentery. Experimental work on bacteriophage is proceeding in the laboratory and in the field. The campaign against kala-azar has now reached a satisfactory stage as far as a diagnosis and treatment are concerned. The new finger prick test with urea stibamine enables the disease to be identified almost with certainty in a few minutes, and the improved course of treatment by injection with pentavalent compounds of antimony (lasting only 5 days, as contrasted with the previous 60 to 90 days) is said to cure permanently 95 per cent. of the cases, with only 5 per cent. of relapses. There are now very few deaths in hospital from this disease, which used to be considered almost universally fatal. Work on the transmission of kala-azar is also progressing well. There is no longer any doubt that *Phlebotomus argentipes* is responsible, though the exact mode of transmission has not yet been demonstrated. Feeding experiments with these sand-flies have so far failed to produce the disease, and it is suggested that the oral route is the most likely method of human infection. Sand-flies are easily killed in the act of biting, and it is thought that the fingers may get contaminated, and the parasites be introduced to the mouth in this way. A curious point has emerged during an investigation in Calcutta. Kala-azar is not endemic in the northern portion of the city, since the sand-flies live and breed in the cowsheds, and feed on cattle; whereas in the south, where they live in fowl runs, they feed on human beings, and hence the disease is endemic.

An important feature of the school is the leprosy department. During the last year attention has been specially paid to improving the general resistance of sufferers by the administration of various remedies, of which potassium antimony tartrate, given intravenously, and sodium bicarbonate, by the mouth, have been found useful; thyroid, when used with care, is said to have proved of great value. An indigenous drug, *Holorrhena dysenterica*, which has recently been found useful in chronic dysentery, investigated both in Bombay and Calcutta, has been employed with advantage, both as a general tonic and as a treatment for dysentery—a condition often accompanying and predisposing to leprosy in Bengal. The intradermal injection of esters by multiple puncture has been found to speed up the resolution of lesions. Research is also proceeding in many

[1] Calcutta: Bengal Government Press. 1930. Pp. 116.

other directions, of which hookworm, malaria, and skin diseases are examples. The last section is in charge of the Director himself, and the clinical and laboratory work carried out has already borne much fruit. The Institute of Hygiene is now, thanks to the generosity of the Rockefeller Foundation, being developed into an All-India Institute, with special buildings, and its development is likely to have a great and beneficial influence upon the study and practice of hygiene in India.

ANNOTATIONS

INTERNATIONAL CONGRESS OF DERMATOLOGY AND SYPHILIS.

WHEN the Seventh International Congress of Dermatology and Syphilis met in Rome in 1912 it was decided that the next meeting should take place in Copenhagen, but it was not then anticipated that 18 years would elapse before there would be another opportunity for international rapprochement and discussion. The formal inauguration of the Eighth Congress, which was held last week from August 5th–9th, took place in the "Folketinsaalen" of the Royal Palace of Christiansborg, in the presence of King Christian, with his Prime Minister and the Mayor of Copenhagen. In his opening address Prof. C. Rasch, the Danish president of the Congress, welcomed his 965 guests, and deplored the absence of famous men, notably Neisser, Unna, Brocq, Hallopeau, and Fordyce, who had attended the last Congress but had since died. Forty-two countries were represented, and the task of the general secretary, Dr. Svend Lomholt, must have been heavy. His organisation, and the coöperation of the municipal authorities for the reception, accommodation, and entertainment of the members and associates, have been beyond praise, particularly when it is remembered that Copenhagen is a town of only 300,000 inhabitants. The programme included a visit to the Rigshospitelet of 1800 beds, where rare dermatological and venereal cases were inspected and discussed on the third day of the congress. Time was also found for a demonstration by Finsen's successor, Prof. A. Reyn, of modern methods and apparatus for the actinic treatment of lupus and allied affections of the skin. The scientific discussions were allotted to three main themes for general discussion: the Ætiology and Pathogenesis of Eczema; Immunity, Reinfection, and Superinfection in Syphilis; and Cutaneous Tuberculosis and its Treatment. Introductory papers by Darier and Jadassohn on eczema were followed by communications from Bruno Bloch, Oppenheim, Pusey, Sabouraud, and Whitfield, and ushered in a general discussion in three languages (French, German, and English), which will long be remembered by those privileged to listen and able to comprehend. Syphilis was reserved for the next day and took place in another room of the palace, simultaneously with the beginning of a series of 177 personal communications from dermatologists and syphilologists from all parts of the world. Many of these were illustrated by diagrams. clinical photographs, charts, and curves, and had to be delivered at a speed which troubled members not fully conversant with the particular language used, and hampered discussion. Much work of undoubted value escaped due notice and this suggests that the time has come for a reconsideration of the programme of nearly all medical congresses, especially international ones. There appears to be no control, beyond the time allotted to delivery—and this is often extended out of courtesy to individuals—of the suitability and quality of papers submitted for discussion. While most of these are doubtless of value, many are not up to international standard, or could have been further pruned with advantage. A tribunal set up in advance by the delegates would find no difficulty, although it might incur some odium, in dividing the communications submitted to almost any congress into three categories: (1) those accepted for discussion; (2) those accepted for publication in the printed proceedings; (3) those rejected: (*a*) for reasons of inadequacy; (*b*) for revision, curtailment, and subsequent publication. This Congress suffered less from unsuitable communications than many others, but even here some process of preliminary selection would have served to make the week even more profitable to dermatologists of all countries.

ON GIVING ADVICE TO THE TUBERCULOUS.

THERE is often an air of infallibility about the giver of advice. He is so certain he knows and so sure also that the recipient does not. Small wonder, therefore, if the modest physician hesitates to do more than answer specific questions from individual patients. But since, as Dr. F. M. Pottenger remarks,[1] "intelligence is the most potent factor that can be directed against disease," no doctor can in practice refrain from giving general advice, especially in a disease involving habits of life, like tuberculosis. Three recently published books on this subject, all of them in their own way excellent, show in what different ways the task may be approached. Dr. Pottenger's book, now in its second edition, attacks the subject from a physiological basis and goes into fuller detail than most other writers for the layman. "No question," he says, "asked by an earnest patient is too insignificant for an answer, and no fact that will aid him in recovering health should be withheld from him." Starting out from this point of view, sections on the CO_2 content of the air, the principles of metabolism, the mechanism of production of cough, temperature regulation, and like questions are the natural outcome of a conscientious desire to tell the patient every relevant fact. The method is obviously only applicable to the more intelligent patients in private practice and sanatoriums, and cannot be applied to the hospital class. Moreover, it is a method requiring much foresight and intuition if the patient is not to become neurotic. But, given the suitable patient and the wise physician, it is a course satisfactory to all parties. Dr. Pottenger's book is an admirable corrective also to that light-hearted class of physician who thinks his duty ended when he has advised his tuberculous patient to take a sea voyage or to go and live in the country and take up poultry farming. "I would rather be treated intelligently in the worst climate than be allowed to run wild in the best," is a dictum of Dr. Pottenger's which not only patients but physicians should ponder. Dr. F. J. C. Blackmore,[2] tuberculosis

[1] Tuberculosis and How to Combat It. A Book for the Patient. Second edition. London: Henry Kimpton. Pp. 275. 10*s*. 6*d*.
[2] The T.B. Patient's Guide. London: Cassell and Co. 1930. Pp. 76. 1*s*. 6*d*.

officer for Woolwich, has devised a little pocket manual to meet the needs of the patient who attends the tuberculosis dispensary, especially in the London area. He gives advice on home treatment, the sanatorium, complications and their treatment, employment, and so forth. Dr. Blackmore stresses the point that failure is often due simply to lack of knowledge on the part of the patient. In this book little or no physiological theory is included, but many practical points. The patient is told what sanatoriums exist (especially in the London area), what rules he will be expected to comply with on admission, and what clothes he should take; how to disinfect his crockery and dispose of his sputum; what State and voluntary funds may help him (some useful information on National Health Insurance and approved societies is included), and what occupations are suitable for him when he reaches the stage of "cure." Different again is the aspect of tuberculosis discussed by Dr. Kurt Klase,[3] Director of the Prinzregent-Luitpold-kinderheilstätte of Scheidegg. His book, written in German, is designed solely to explain the meaning of tuberculosis in childhood to the lay public. Its most valuable content is the removal of the fear that tuberculosis in childhood is the appalling and fatal disease which the Victorian novel taught the public to believe. Dr. Klase points out in simple language that in childhood infection with the tubercle bacillus is the rule rather than the exception in modern civilised life, but that this infection is by no means a thing to be afraid of and is very different from the acute fatal tuberculosis which occurs in a small proportion of children. The book is a good example of the best kind of public health propaganda which imparts knowledge simply without sensational detail.

INTERNATIONAL LEAGUE AGAINST TRACHOMA.

THE International Anti-Trachoma League, the foundation of which was planned last year at the International Ophthalmological Congress held in Amsterdam, has now taken shape. A meeting took place last month in the Palace of the League of Nations in Geneva, 21 different States being represented by 40 delegates. Prof. Dr. Emil de Grósz presided, the statutes were passed, an executive committee was formed, and a preliminary programme for the campaign was outlined. The objects of the League are: to further the coöperation of the various organisations for the prevention of trachoma; to enlist the help of the international bodies concerned with public health; to keep in touch with all measures designed to combat the spread of trachoma and to further their adoption; to attempt to place the campaign on a scientific basis; to elucidate the ætiology as well as to extend the treatment of the disease; to investigate its social aspects, and finally to formulate legislative measures designed to prevent it. Prof. de Grósz was elected president of the League, to hold office for five years; Dr. Wibaut (Amsterdam), secretary-general; Dr. Tewfik (Cairo), secretary. The representatives of the Hygiene Committee of the League of Nations, Mr. Lutrario, former chief of the Italian Medical Department, and Mr. Jitta, chairman of the Dutch Board of Health, have prepared a report on trachoma which has been distributed by the Council of the League of Nations. Dr. Olitsky (New York) attended the meeting at Geneva on behalf of the Rockefeller Institute, and delivered an address on the importance of the bacillus discovered by the late Dr. Noguchi, and Mr. Addario (Palermo) and Mr. M. S. Mayou (London) gave demonstrations. The delegates from the different nations evidently welcomed the opportunity of discussing common and complementary problems, and everything points to the likelihood of the League becoming a prosperous and useful undertaking. The countries which are obliged by their geographical position to take steps to prevent the introduction of trachoma are in the same need of a campaign against it as those where it is actually destroying eyesight. In Hungary the campaign against the disease was started as long ago as 1886 by the passing of a special law. The exertions of Japan in this respect are also worthy of praise, for there exist in that country 1000 trachoma departments where half a million trachoma patients are treated annually by specialists at a cost of half a million yen a year. The League of Nations has issued a special circular letter to all Governments requesting them to support the scheme, and we trust that the response will be good.

MILK-BORNE EPIDEMICS.

THE epidemic of sore-throat which occurred in Brighton and Hove in November–December, 1929, and was traced to milk is the subject of comment by Dr. D. Forbes in his annual report, which we notice on p. 371. He gives two reasons why some time elapsed before milk was suspected in this outbreak. One is that while epidemics of scarlet fever and diphtheria due to milk are frequently reported, outbreaks of other forms of sore-throat have only occasionally been traced to milk in this country. Secondly, the practitioners thought that they had to do with a special type of influenza focusing itself upon the pharynx; such types of sore-throat are not notifiable. Dr. Forbes makes some suggestion which, if adopted, might prove helpful in detecting sore-throats due to milk. The first is to empower the medical officer of health to ascertain the source of the milk-supply promptly in cases of sore-throat which are not notifiable. In Brighton, for example, some 24 swabs from suspicious throats are received weekly, of which 21 give negative results for diphtheria bacilli. Dr. Forbes proposes, and the local division of the B.M.A. concurs, that every practitioner who sends a swab for examination should fill in on the accompanying slip the source of the milk-supply. The arrival of a number of slips quoting a particular milk-supply would arouse suspicion at an early stage of an outbreak. A second suggestion is made that the model form of contract between producers of milk and distributors should include a clause requiring the producers to notify to the distributor not only the legally notifiable diseases but also any type of sore-throat or diarrhœa occurring in the families of his employees. This suggestion has been approved by the Home Counties Branch of the National Federation of Dairymen's Associations. The Brighton Health Committee have asked the Ministry of Health to make regulations, if possible, rendering this form of notification by the milk producer compulsory. In the third place Dr. Forbes points out that, in his view, pasteurised milk is the only designated milk which gives protection to the consumers against such outbreaks. He adds that one-third of Brighton's milk-supply is now pasteurised, although only a portion of it is sold as designated milk.

Critics might say that if pasteurised milk is not sold as designated milk there is no control of the

[3] Was sollte der Laie von der Kinder-Tuberkulose wissen? Kurze Mahnworte. Leipzig: Curt Kabitzsch. Pp. 16. M.0,60

[1] See THE LANCET, 1930, i., 94, 99, 213.

method adopted or of its adequacy; and also that since adequate pasteurisation can only protect against infection of the milk before the time of pasteurisation, the possibility of infection by the distributing agency has still to be reckoned with. Infection of the milk has often been traced to the distributing dairy as distinct from the producing dairy farm. It might be contended that dried milk is safer even than pasteurised from this point of view, but milk-borne epidemics are so rare that public opinion would hardly contemplate the abolition of liquid milk on this ground. If precautions such as notification of milk-supply were adopted the risk to the householder would be very small, and he could, if he wished, reduce it still further by adopting, as an alternative, an adequate form of home pasteurisation or the west country method of setting up the milk for clotted cream.

THE LEGALISATION OF EUGENIC STERILISATION.

THE promotion of legislation to permit the sterilisation of such persons as should be prevented, in the interests of the community, from reproducing their kind, is one of the objects of the Eugenics Society. The society appointed a special committee to further this object and the report of the committee is summarised in another part of this issue (p. 369). That legislation is necessary is hardly in doubt, for so eminent an authority on the common law as Mr. Justice Humphreys has stated that, no matter how admirable the motives of surgeon, parent or guardian, the surgeon who operated would certainly be indictable under the Offences against the Person Act, 1861, and the parent or guardian under the Mental Deficiency Act, 1913. Even voluntary sterilisation is stated by Lord Riddell probably to constitute a maim, an old term for a serious injury likely to interfere with fighting power; castration has always been considered a very serious maim, for it is believed to reduce the courage of the person on whom it is practised. The committee outline the provisions of the Bill which they intend to draft; the sterilisation which they propose to legalise would in all cases be voluntary, except that a defective of such a low grade as to be unable to give consent might be sterilised with the consent of his relatives on discharge from an institution. The Bill is to be divided into three clauses or parts, dealing respectively with mental defectives, the recovered insane, and persons suffering from grave transmissible diseases and defects other than insanity and mental defect, and—what many will consider a very advanced provision—those desiring to avoid procreation on eugenic grounds. The arguments of the advocates of sterilisation cannot be dismissed without careful consideration. As the report points out, it is no part of the proposals that the policy of segregation should be in the least relaxed. Although R. A. Fisher calculates that, if all primary aments were prevented forthwith from breeding, the incidence of mental deficiency would be reduced by 17 per cent. in a single generation, other authorities think that in practice sterilisation would not have much appreciable effect for a far longer period. An argument harder to counter is that it would do a certain definite amount of undeniable good without any harm that can be convincingly demonstrated. It is accepted as fact that defectives very often have defective children and that as a class they fail lamentably in managing their homes and bringing up their offspring. It is difficult to see how, in the absence of proved harm, the community could lose by their sterilisation; the tendency to neuropathic disorder is known to be transmissible, and it is not unreasonable to aim that as little should be transmitted as possible. The chief argument against the sterilisation of defectives so low in intelligence that they are unable to give consent is based on the desirability of safeguarding the natural rights of the individual, however little gifted. But it must be remembered that in some cases liberty of movement, which the community would otherwise insist on curtailing, could be exchanged for liberty of procreation. The case against sterilisation rests essentially less, perhaps, on the desire to protect the individual than upon a very old concept which concerns the welfare of the State—viz., that no one, even by his own consent, should be allowed to undergo an injury that would depreciate his value to the State as a fighting man, or as the procreator of fighting men. It is doubtful whether even castration—and that is not recommended by the advocates of eugenic sterilisation—abolishes courage; the Tawashia of the old Arab and Turkish civilisations were not only good soldiers but good leaders. Even if it be admitted that it is necessary for the State to safeguard the breeding of warriors, the classes whom the committee propose to allow to consent to their own sterilisation are not those from whom such stock can reasonably be expected. It is at least conjecturable that the real objection to sterilisation is rooted far more deeply, in the instinctive fear of mankind of death, either of the individual or of the race. The procreative instinct is the race's most potent weapon against death, and to fetter its freedom appears at first sight to be a dreadful thing. It can be argued, however, that there are few things more really dangerous, either to the race or to the individual, than an unfettered instinct, and that indiscriminate multiplication in the community is no less deadly than cancer in the human body. The problem of the mentally unfit is a very urgent one, and the community can only steer the safe middle course by reasoned judgment based on proved fact.

THE HEALTH OF THE ADULT WORKER.

A FALLING mortality, especially in early years, is generally accepted as a sign of successful public health measures. But we may now and again pause to examine the results. A generation resulting from a low infant mortality is now reaching adult years. What connexion, if any, is there between this circumstance and the fact recently stated by the Secretary for War that something like 61 per cent. of those who offer themselves as army recruits have a reduced standard of height, chest measurement, and dental requirement?[1] We read, moreover,[2] that whereas the approximate number of weeks for which sickness and disablement benefits were paid under the National Health Insurance Acts in 1919 was 19 million weeks, it was 25 million weeks in 1925, and 29½ million weeks in 1929, even though since January, 1928, the age at which sickness and disablement benefit is paid was reduced from 70 to 65. In the registration area of the United States mortality in early life has been falling, as in this country, but now a new phenomenon has appeared over there—for all ages after 35 the mortality in 1927 had risen as compared with 1921. We seem, then, to be faced with a greater need

[1] THE LANCET, August 9th, p. 318.
[2] Ibid., p. 319.

than heretofore for safeguarding the adult years of life

The report of the Factory Department [3] gives an indication of the position among industrial workers, and of the efforts made to combat adverse influences on their health. In the section on the occurrence of accidents, which represent the reaction of the individual to his environment, we find that, as usual, 80 per cent. were due to causes such as falls, struck by falling body, handling goods, and use of hand tools; all of which are causes under personal control, more likely to be avoided by those whose special senses are acute and whose reactions are brisk. Only 20 per cent. were caused by moving machinery; and even here lack of personal acuity is often the determining factor. The number of reported accidents rose from 154,319 in 1928 to 161,269 in 1929; and fatalities from 953 in 1928 to 982 in 1929. Here, again, evidence seems to indicate that human adult material is less resistant than heretofore, and less capable of meeting the hazards of life. This rise in the occurrence of accidents is the more disappointing in that a steady campaign to spread safety-first methods is being pressed forward by the factory inspectorate. A further disquieting fact is that sepsis occurred in 10 per cent. of the reported cases; since some of these were strains and sprains which would not be associated with any wound, the proportion of wounds which went septic is even higher than this figure suggests. The reason may be neglect to make adequate use of first-aid appliances, but may also suggest lack of good capacity for healing. Examples are quoted to show how well-planned efforts may reduce accidents, in one case a frequency-rate from 85·6 in 1927 to 67·7 in 1929, and a severity-rate from 2·2 to 1·7. Education and organisation are indeed needed. One fatality was due to walking on an 18-inch steel girder at a height of 75 feet from the ground; the man was reading a plan and, not watching his steps, walked off the end of the girder. Many instances of carelessness are quoted, resulting in electrical accidents; but here, while the hazard, as measured by units of energy sold, has doubled during the six years ended 1928, the accidents have only increased by 8½ per cent.—a commendable result due to practical regulations controlling the methods of supply and the apparatus used. A warning is given that the alternating system, adopted by the Electricity Commissioners for general use, is more dangerous to life than the direct current system.

Much of medical interest is described by Dr. J. C. Bridge, whose report deals increasingly with wider aspects of health and disease, while comparatively less space is devoted to old-time favourites, like lead poisoning and anthrax. Cases of lead poisoning only numbered 169 for the 12 months compared with 242 in 1926, 505 in 1910, and 1059 in 1900. This result has followed suppression of dust containing lead salts; indeed as Dr. Bridge says, this is the "dust age" in industrial medicine. Silicosis, due to inhaling silica dust, is to-day the most prominent industrial disease, the full prevalence of which, as revealed by recently granted compensation, is not yet known. A new disease, due to the dust of asbestos, has been detected, causing diffuse pulmonary fibrosis, disablement, and death without a superadded tuberculous infection. Of almost equal importance are the cases of epitheliomatous ulceration of occupational origin, arising from contact with pitch, tar, paraffin, or mineral oil, all distillation products of coal; they showed a slight reduction on the previous year, 165 with 50 deaths, as compared with 175 with 59 deaths. Here the institution of periodic medical examination in the industries concerned is bringing the risk under control. A closely allied trouble is that of dermatitis, which shows no tendency to diminish, while painters claimed an increased proportion, 10·3 per cent. of the cases, due probably to the use of turpentine to clean their hands and arms. Chromic acid and chromium compounds, used in lithographic processes, were sources of skin irritation; as were cutting lubricants and cooling liquids used in engineering. The use of an alkaline wash, such as chlorinated soda, is recommended for removing oil and grease after work. Many other matters of interest are noted, including a satisfactory increase in the number of workers with knowledge of first-aid, and in the provision of ambulance rooms, as well as special reference to cases of gassing. Here carbon monoxide continues to claim more cases and deaths than all other gases taken together; generally the cases are tragic, and could have been prevented. One man, overcome at some simple job, jeopardises the lives of others who attempt rescue with courage, but without application of proper principles.

The report leaves the impression that the industrial worker, as well as industry, is in these days depressed.

[3] Annual Report of the Chief Inspector of Factories and Workshops for 1929. 1930. H.M. Stationery Office. Cmd. 3633. Pp. 173. 2s. 6d.

AN OFFICIAL CORRECTION FROM THE M.R.C.

WE have been desired by the Medical Research Council to publish the following official statement from the Council.

The attention of the Medical Research Council (Great Britain) has been drawn to a misleading advertisement, involving misuse of their name, which has been given currency on the American Continent in respect of a preparation of ergotamine tartrate known as Gynergen "Sandoz." This advertisement states that "The Pharmaceutical Society of Great Britain, after consultation with the Medical Research Council, adopted Gynergen as the standard for ergot, thus making it the acknowledged leader in this field." This statement is not true.

The Medical Research Council desire to make it plain that they never at any time concurred in, or were consulted about, the adoption of this preparation as a standard. The suggestion made with reference to the Council is therefore entirely without foundation, and any statement implying their approval is a gross misrepresentation.

Further, the current official publications of the Pharmaceutical Society of Great Britain state expressly that for ergot "the standard is a sample of ergotoxine phosphate which is kept in the dark *in vacuo* over phosphorus pentoxide." The adoption by the Society of this standard, in place of a sample of ergotamine tartrate, was also announced three years ago in a paper by Burn and Ellis (*Pharmaceutical Journal*, 1927, cxviii., 384), which constituted a report to the Chairman of the International Conference on the Biological Standardisation of Certain Remedies.

CONGRESS FOR SEX RESEARCH.

THE Second International Congress for Sex Research was held at the B.M.A. House from August 3rd to 9th. Over 200 members attended, and many countries were represented. Prof. F. A. E. Crew presided over the congress; Dr. Albert Moll, president of the International Society for Sex Research, was the only vice-president; Mr. B. P. Wiesner, Ph.D., acted as general secretary, and Mr. A. W. Greenwood, Ph.D., as publications secretary. Ten medical men served, among others, on the British organising committee, which arranged an admirably varied programme. The subject of the presidential address was Puberty and Maturity, and the subjects dealt with at the general session on August 5th included communications by Prof. Paul Bouin and Dr. J. Benoit (Strasbourg) and by Prof. H. C. Koch (Chicago) on the testicular

hormone, and by Prof. J. B. Collip (Montreal) on the ovary-stimulating substance of the placenta. On the following days the general sessions were devoted to papers and discussions on the influence of hormone therapy on sexual functions, opened by Prof. L. Fraenkel and Dr. E. Fels (Breslau); psycho-analysis and biology, opened by Dr. Ernest Jones (London); transformation of the sexual into the maternal instinct, opened by Prof. Carlo Ceni (Bologna), and the methods for the control of human fertility. The afternoons were mostly devoted to sectional meetings at which over 100 short communications were submitted on diverse subjects, ranging from biochemical studies of the sex hormones to special forms of sadism. On August 6th an excursion was organised to Cambridge, where at the School of Agriculture demonstrations were given by workers at this school and also by the Animal Genetics Department of the University of Edinburgh, and by the Strangeways Research Laboratories, Cambridge.

MEDICAL INSURANCE AGENCY.

A MEETING of the committee of management of the Medical Insurance Agency was held at the House of the British Medical Association on July 29th, when the report of the twenty-third year of the agency's work and the corresponding balance sheet were adopted. It was revealed in the report that the general progress of previous years had satisfactorily continued, an outstanding feature being the successful opening of the office in Scotland. The total premium income for the year approximated £98,000—an increase of more than £8000 as compared with the previous year—while 6500 renewals had to be dealt with. The commission from motor-car insurance continued to increase rapidly. Life assurance dealt with through the agency approximated during the year to two million pounds. The following grants were made to organised medical charities for 1930:—

		£	s.	d.
Royal Medical Benevolent Fund	..	630	0	0
Royal Medical Benevolent Fund Guild	..	630	0	0
Epsom College—				
Dawson Williams Memorial Fund	£650			
Royal Medical Foundation ..	£210			
Head Master's Discretionary Fund	£100			
		960	0	0
Girls' Education Fund	..	250	0	0
Royal Home for Incurables, Putney	..	52	10	0
Sir Charles Hastings Fund ..	..	52	10	0
Royal Medical Benevolent Fund (Ireland)		25	0	0
		£2600	0	0

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE annual meeting of the British Association, to be held at Bristol from Sept. 3rd to 10th, promises well. The sciences will be divided, as usual, into sections, of which this year 13 will meet concurrently in different rooms. The programme submitted is chronological, all sections being included, so that any member who gives it the study it deserves can pick out those communications likely to interest him and make plans to visit several sections on any day. Prof. F. O. Bower, F.R.S., Emeritus professor of botany (Glasgow), is this year's president and will deliver his address on Size and Form in Plants at the inaugural general meeting at Colston Hall on Sept. 4th. We have already called attention to certain notable addresses and discussions, which should yield a rich harvest, and would now stress the importance of many of the communications offered to Section J (Psychology). On the opening day of the meeting a discussion will be held on the Psychology of Adolescence, to which Prof. Olive Wheeler, Dr. R. G. Gordon, Miss A. H. McAllister, and Miss M. Phillips will contribute. On Sept. 5th Prof. C. W. Valentine (Birmingham) will deliver his presidential address on the Foundations of Child Psychology, and in the afternoon the shorter communications to the section will include a survey of the Place of Industrial Psychology in a University City, by Dr. C. S. Myers, F.R.S. Section J joins with Section I (Physiology) on Sept. 8th, when Mr. J. Drever, D.Phil., Prof. H. E. Roaf, Dr. R. J. Lythgoe, and Mr. J. H. Shaxby, D.Sc., will discuss the question, "In what sense can we speak of primary colours?" Other interesting papers to be read at this section include two on conditioned reflexes from the psychological point of view, by Dr. P. C. P. Cloake, and Dr. A. Wohlgemuth respectively; one on perseveration and the introvert, by Dr. W. J. Pinard; one on the psychophysics of desire, by Mr. C. A. Mace; and one on the psychology of the tuberculous patient, by Dr. H. Banister. A closer union between the ideas of those engaged in medical practice and those engaged in psychological research is one of the outstanding needs of the present time, and doctors who are members of the British Association should follow closely the activities of this section.

ON the passing of the Mental Treatment Act the Board of Control, with the approval of the Minister of Health, have appointed Mr. P. Barter (of the Ministry of Health) to be joint secretary of the Board. Mr. Barter was secretary to the Committee on Asylum Administration, 1921–22; the Royal Commission on Lunacy and Mental Disorder, 1924–26; and the Royal Commission on Local Government, 1928–29.

THE Royal College of Physicians of London will be closed for the summer vacation from Monday, August 18th, to Saturday, Sept. 20th, both days inclusive. In our advertisement columns application is invited for the office of Milroy lecturer for 1932. The course consists of three lectures on State medicine and public hygiene; suggestions for the choice of subject were left by Dr. Milroy in his will, and are at the disposal of applicants.

AN additional coroner, to be appointed for the County of London at a salary of £1700, will probably be allocated to the new northern division of the County.

Prof. G. Grey Turner has been invited to deliver the John B. Murphy Oration before the Clinical Congress of the American College of Surgeons in Philadelphia on Oct. 13th.

WE regret to announce the death in Belfast of Dr. John Elder MacIlwaine, professor of materia medica and therapeutics at the Queen's University, and visiting physician to the Royal Victoria Hospital. He was in his fifty-seventh year.

BELFORD HOSPITAL.—The Duke of York, as Earl of Inverness, recently opened a new operating theatre at the Belford Hospital, Lochaber, Inverness-shire, as a memorial to Dr. Cameron Miller, who was medical superintendent for 41 years until his death in 1927.

CLINICAL INTERPRETATION OF AIDS TO DIAGNOSIS

A Series of Special Articles, contributed by invitation.

LXXXI.—THE CLINICAL SIGNIFICANCE OF SLIT-LAMP APPEARANCES.

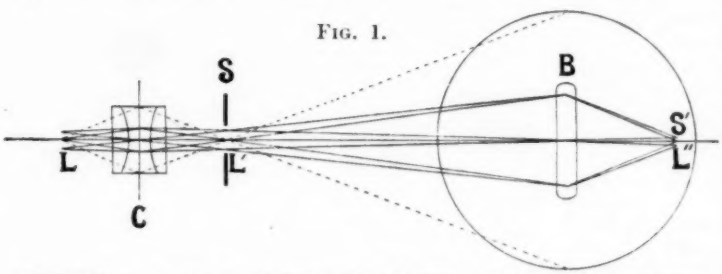
PART I.*

THE introduction of the binocular corneal microscope many years ago raised the hopes of the ophthalmic surgeon, in that it promised to be an instrument which, capable of 60–100 magnifications, might prove of great help in diagnosing conditions of the cornea and iris which were not visible with the ordinary corneal loupe of 8 to 10 magnifications. The result was that apart from a few observations of interest, especially in the lens by Hess, there followed very little increase in our knowledge.

In 1911 Gullstrand showed at the International Ophthalmological Congress at Heidelberg an entirely novel method of illuminating the anterior segment of the eye, which enabled the observer to see peculiarities in the structure of the vitreous and lens, even with quite low magnifications. The best results were obtained when there was a perfect control of the distribution of light and shadow. The essential point was to obtain a sharp image of a bright and uniform source of light, so beautifully focused that it might be projected upon that portion of the eye which we wished to examine and all other light shut out from the field. The examination had to be conducted, therefore, in a dark room, and various reflexes, from the highly polished refracting surfaces of the eye, excluded. The aim was to obtain first of all a sharply limited uniform source of light of high specific intensity, and secondly a sharp optical image of this source.

In the past we sought a uniform source of light for ophthalmoscopic examination, and this was obtained by using, in earlier days, the Argand gas burner or duplex petroleum lamp and in more recent days the frosted electric lamp with a closely wound filament. Neither of these sources of illumination was suitable because neither was of high intensity, neither were they at all uniform.

FIG. 1.

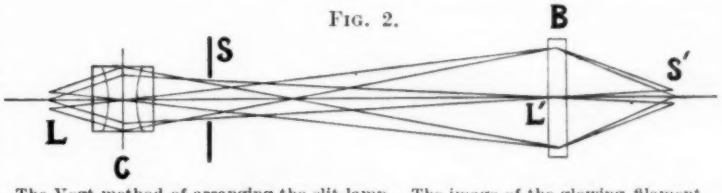


The Gullstrand method of arranging the slit-lamp. The image of the glowing filament (L) is formed in the slit (S L') which is then focused upon the eye (S'L") by means of the illuminating lens (B) (Meesman).

At the date of the invention of the slit-lamp there were only two sources of light (apart from sunlight) which were uniform—namely, the crater of the positive carbon of an arc lamp and the glowing filament of a Nernst burner. The arc lamp was so cumbrous at that date that its use was not practicable, consequently Gullstrand chose the Nernst lamp as his source of light. As the image of the source of light had to be used with a diaphragm, this diaphragm, made to enclose the image of the glowing filament, had necessarily to be shaped as a slit, and it was for this reason that the illuminating lamp was equipped with a slit.

The complete illuminating apparatus consists of the glowing filament enclosed in a tube at the other end of which is a slit of variable width. Between the two is a condensing system whereby an image of the glowing filament is projected in the slit. An image of the image of the glowing filament in the slit is projected upon the portion of the eye to be examined with an aspherical lens. (Fig. 1.) It is not possible to obtain Nernst lamps now and consequently some other source of illumination had to be devised, and so the Nernst lamp has been replaced by the Nitra lamp which consists of a tightly wound glowing spiral of tungsten in an atmosphere of nitrogen. The disadvantages of such a lamp are that the spiral does not produce a uniform source of light, it is seldom straight, and the glass globe deteriorates the optical image projected in the slit.

FIG. 2.



The Vogt method of arranging the slit-lamp. The image of the glowing filament (L) is formed on the illuminating lens (B). The image (S') of the slit (S), filled with homogeneous light, is focused by the illuminating lens (B) upon the eye (Meesman).

The lens (the illuminating lens) which projects the image of the glowing filament in the slit upon the eye is fixed upon an arm which projects from the tube of the illuminating system (the arm of Henker). It is found that if the image of the filament itself be projected upon the illuminating lens then the slit acts merely as a diaphragm filled with homogeneous light, an image of which may be projected upon the eye by the illuminating lens. This method, known as that of Vogt, is the one usually adopted, and the aspherical illuminating lens is replaced by an achromatic lens severely diaphragmed (11 by 16 mm.) and having a focal length of 10 or 7 mm. (Fig. 2.) This prevents the light from being broken up and, having a small diaphragm, no trouble arises from spherical aberration.

The complete apparatus now consists of a luminous source, a condenser, a slit, and at the end of Henker's arm, which is 35 cm. in length, an achromatic lens of 10 to 7 cm. focal length. This apparatus is mounted on an arm attached to the pillar of a suitable table to which also is attached a chin and head rest for the use of the patient. In this way the head is immobilised, and the light can then be practically focused upon the portion of the eye we wish to examine. We use in connexion with this illuminating the Czapski binocular microscope, which has long been in use, but with only medium amounts of magnification, seldom more than 23 diameters. The microscope has an erecting mechanism in the eyepiece so that we observe upright images, a matter of great convenience. In connexion with the screw of the focusing arrangement is a device for measuring the depth of the anterior chamber. (Fig. 3.)

Methods of Examination.

It must not be imagined that the slit-lamp and microscope are together merely a piece of apparatus for practising a superior type of focal examination.

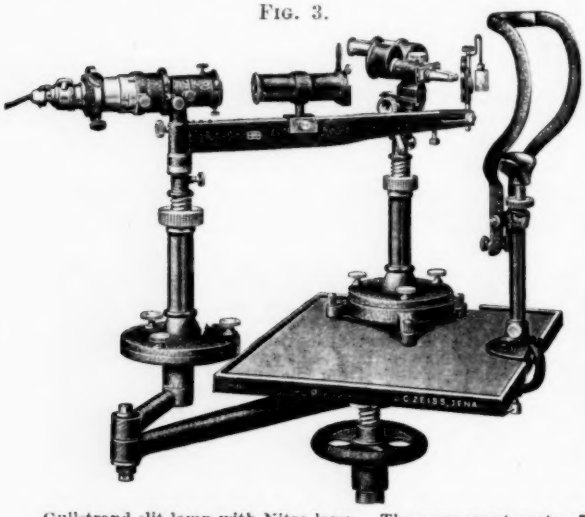
* Parts II. and III. will appear in subsequent issues.

It is true that this is one of its special functions, but owing to the peculiar transparent property of the parts of the eye open to investigation several other new methods of examination are open to us.

Examination in *focal light* is the easiest as well as the most useful method, and owing to the intensity of the illumination small opacities in otherwise what appear to be perfectly transparent structures may be exhibited by the principle of dark-ground illumination.

One new method is that of examination by *trans-illumination*. For this it is necessary that the structure to be examined should be transparent or at least translucent; it is also necessary that there should lie behind it a surface of sufficient polish to act as a reflecting or diffusing screen. Thus, to examine the cornea in this way we concentrate the light upon the portions of the iris or lens which lie behind it and certain changes in the endo- and

FIG. 3.



Gullstrand slit-lamp with Nitra lamp. The component parts—lamp, Koeppe tube, and illuminating lens—are mounted on the arm of Henker. The method fixing the apparatus to the table is shown, also the head and chin rest. The microscope may easily be moved into a desired position by sliding it over the glass plate.

epithelium are made much more apparent. The iris, if translucent by disease or injury, may be examined by light reflected by the surface of the lens, especially if it be cataractous, and the anterior part of the lens by light reflected by the posterior part.

EXAMINATION IN ZONES OF SPECULAR REFLECTION.

When light strikes a more or less polished surface it is reflected in three ways: (*a*) *Diffuse reflection*, whereby we can see the surface. (*b*) *Regular reflection*, whereby images are formed, to see which we must be in the path of direct reflection of rays. (*c*) *Irregular reflection*, whereby irregularities of the surface are made apparent. A good example of irregular reflection is shown by the glint seen on a blackboard which prevents one seeing the writing in the zone. If the position of the head be shifted then the glint will appear in another part of the board obliterating the writing here, whereas the writing in the previously obscured area will reappear. If attention be paid to each of the zones the irregularities of the surface, such as the grain of the wood or the marks of the brush, will be seen, and in this area alone. This peculiar phenomenon was first investigated by Vogt, and by its means the endothelium of the cornea may be seen with no more than 23 magnifications, and in some instances the nucleus of the cell may be seen.

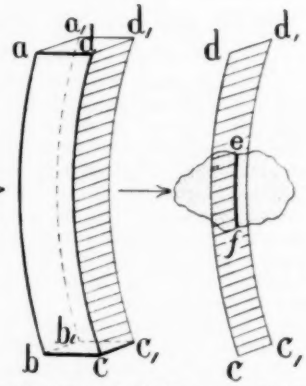
LOCALISATION IN DEPTH.

A most important advance in our means of investigating the translucent part of the eye is the means we now possess of deciding at what depth a lesion lies. This is one of the important functions of the slit-lamp and microscope. The two most important means available are:—

1. By *focusing the microscope* we may judge by the amount the microscope has to be advanced or withdrawn to bring it into focus, at what relative level a lesion lies.

2. Vogt introduced a most valuable means when he described the method of the *optical section*.

FIG. 4.



Localisation in depth by means of the corneal prism: (a b c d) = anterior band, (a,b,c,d,) = posterior band, (d c c,d,) = the optical section. If the slit be very much reduced in width the optical section becomes extremely thin, and by its means the depth of a lesion in the cornea or lens may be determined (Meesman).

The media of the eye are in no instance perfectly transparent and when the ribbon of light projected by the illuminating lens passes through them the path of the rays is easily visible, like a beam of light shining through an otherwise darkened room. Taking the cornea as our example, a parallelogram of light will be reflected by the anterior surface to the cornea and a corresponding one at the posterior surface, the intervening part scattering light so as to render the thickness of the cornea visible. The lateral face of the beam as it shines through the cornea is called the *optical section*, and if the slit be very much narrowed we may produce an illuminated layer of the cornea not more than 50 μ in thickness. (Fig. 4.) By judging what portion of the optical section first illuminates a lesion or foreign body we are able to decide at what depth it lies. The optical section is of importance in examining the lens and we shall see that here some remarkable discoveries have been made.

This brief account gives some idea of the origin of the slit-lamp and the methods of investigation that it has opened up. The application to clinical ophthalmology is largely due to Vogt, and a glance at the bibliography of slit-lamp literature will show the amount that this master has contributed to what is still a young branch of ophthalmology. The parts of the eye that are open to slit-lamp investigation are: (1) conjunctiva; (2) cornea; (3) anterior chamber; (4) lens; (5) anterior third of vitreous. (Fig. 5.) Taking these structures in order we shall see how the slit-lamp has revealed many new points of normal appearance, has elucidated points in diseased conditions about which we had already some information; but its chief value has been to allow earlier diagnosis as well as to point out entirely new conditions.

FIG. 5.

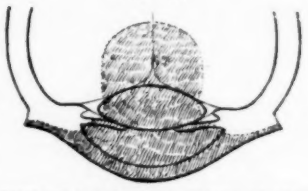


Diagram to show the parts of the eye capable of examination by slit-lamp microscopy (Koby).

CHARLES GOULDEN, O.B.E., M.D., M.Chir. Camb., F.R.C.S. Eng.,

Ophthalmic Surgeon to the London Hospital; Surgeon, Royal London Ophthalmic Hospital.

SPECIAL ARTICLES

A REPORT ON
SEASONAL VARIATION IN THE GROWTH OF SCHOOL-CHILDREN.*

BY J. B. ORR, *D.S.O.*, *M.C.*, M.D., D.SC. GLASG.,
DIRECTOR OF THE ROWETT RESEARCH INSTITUTE;
AND
M. L. CLARK, L.L.A.

(*From the Rowett Research Institute, Aberdeen.*)

DURING the investigation on the effect of milk on the growth of school-children, already reported in this journal,[1] [2] there was evidence that the increase in height and weight of the children was not distributed evenly throughout the period of the test. To obtain further information on what appeared to be a seasonal variation in the rate of growth, the periodic measurements were continued for another year.

Previous Work.

To Malling-Hansen [3] we are indebted for the first accurately recorded observations on seasonal growth in height and weight, though Buffon [4] had suspected that summer and winter growth in height in children might not proceed at an equal rate. In the children of a deaf and dumb institution in Copenhagen, Malling-Hansen, from painstaking daily observations extending over three years, found three main periods of growth (excluding the summer vacation weeks). These were:—

PERIOD.	HEIGHT.	WEIGHT.
Minimum ..	Mid Sept. to end Nov.	End April to mid July.
Medium ..	End Nov. to end March.	Mid Dec. to end April.
Maximum ..	End March to end June.	Mid Sept. to mid Dec.

He also noted that the greatest weight increase was during and just immediately after the summer holiday, while there might even be loss of weight in the period from April to July. Camerer,[5] on a few German children observed for several years, also noted seasonal differences in growth, with loss of weight in the warm spring days. Schmid-Monnard [6] likewise found distinct periods in growth, the weight increase being greatest in the second half of the year, with an actual decrease occurring in March. Bleyer,[7] in 1000 German infants, found the weight increase to slow down in winter and still more in spring and early summer, but to hasten in late summer and autumn. Porter,[8] in "several thousand" school-children in Boston, U.S.A., observed during their whole school life, was able to show a very marked seasonal difference in weight increase, the September to January period averaging (in boys) 3·40 lb., the February to June period 0·82 lb. He also found loss of weight in April, May, and June. Gebhart,[9] with Italian children in New York, showed a spurt of weight in autumn and arrest (but not loss) in spring. Frank [10] found a seasonal difference in height increase even in infants from birth up to two years; a rapid rise from April to June, slowing down in the hot summer months and still more in the winter months. v. Wendt,[11] on 15,000 children in Finland aged from 11 to 16 years, found a maximum increase in height from June to September, in weight from October to January; a minimum in both height and weight from February to May. Emerson,[12] on the contrary, from records of over 800 children in such different centres as Honolulu, Toronto, and New York, could find no difference in the rate of increase in height throughout the year, nor any correlation between the rate of increase in weight and the sunshine record in each city. He considers fluctuations in weight most probably due to infections and hygienic conditions, not to biologic reasons. Corry Mann [13] found that, in a group of 220 school boys, the increment in height during summer—i.e., from April 1st to Oct. 1st—was almost invariably greater than during the winter period from Oct. 1st to April 1st, and that there was also usually a greater gain in weight during the summer.

With the exception of these observations of Corry Mann, we have been unable to find any records of seasonal differences in growth of children in Scotland or England. The following observations, though on rather small numbers (657), are offered as a contribution to the existing data on this subject.

Present Investigation.

The children on whom the observations were made were attending public day schools in Glasgow, Edinburgh, Dundee, Peterhead, and Greenock.

METHOD.

The measurements were taken in the second and third weeks of December, 1928, March, June, September, and December, 1929. The children measured were from 7 to 11 years of age. They had received no supplementary feeding since June, 1928, and were therefore on their ordinary home diets.

All the measurements were taken by one observer, the centres visited in the same rotation, and children weighed and measured at the same time of day on each occasion, without shoes, but with indoor clothing. The average weight of clothing at each weighing was computed by the method described in the previous report,[1] and the difference allowed for in calculating each increase in weight of the children. The weights were taken to the nearest quarter of a pound, the heights to the nearest eighth of an inch. With these precautions it was hoped to ensure accurate records and to avoid the daily fluctuations in height and weight which previous observers (Malling-Hansen, Camerer, among others) had recorded, and which had been noted in the Scottish children in the milk tests (1), (2).

The periods were: (1) From December, 1928, to March, 1929. (2) From April, 1929, to June, 1929. (3) From July, 1929, to September, 1929. (4) From October, 1929, to December, 1929.

In the case of children who had suffered any serious illness the data were omitted from the records. The data for the Greenock children were also omitted, owing to the fact that the machine on which the weighings and measurings were done was changed after the first observations, and there was some doubt about the accuracy of the yardstick on the first machine which was not checked. The data were calculated separately, and though the results do not

* Part of the expenses of this Survey was defrayed by a grant made to the Department of Health for Scotland by the Empire Marketing Board. The Nutrition Committee of the Medical Research Council were kept informed of the progress of both this and the previous investigation on the effect of milk on school-children, and acknowledgment is made for the helpful advice and criticisms obtained from the Committee, who are, however, not in any way responsible for the accuracy of the data or views expressed.

differ materially from those recorded from the other four centres, owing to the element of doubt as to their accuracy, it was necessary to omit them.

RESULTS.

The cards used were first of all divided into age-groups for each sex, irrespective of centre, and the mean increase in height and weight during each period were calculated. The results are given in Table I.

TABLE I.—*Height: Mean Increase in Inches.*

Age in years.	Number.	Period— I. (Dec.–March).	II. (April–June).	III. (July–Sept.).	IV. (Oct.–Dec.).
		Boys.			
7	59	0·4301	0·8518	0·5357	0·3773
8	40	0·4969	0·7535	0·5031	0·3081
9	26	0·4952	0·7396	0·4243	0·3542
10	111	0·4189	0·6898	0·5172	0·3010
11	70	0·3893	0·6848	0·4729	0·3114
		Girls.			
7	68	0·4926	0·7701	0·4909	0·3894
8	52	0·4809	0·7572	0·4828	0·3750
9	25	0·4700	0·7500	0·4375	0·3287
10	139	0·3858	0·7284	0·4991	0·3265
11	67	0·4123	0·7271	0·5438	0·3667

It will be seen that in every case the greatest increase in the year is in the second period (April, May, June); the smallest increase in the last period (October, November, December). In seven out of ten groups the third period (July, August, September) has the second greatest increase; also in seven out of ten groups the first period (January, February, March) has the second lowest increase.

Table II. gives the data for the boys of all ages combined and for the girls of all ages combined.

TABLE II.—*Height: Mean Increase in Inches.*

—	Period— I. (Dec.–March).	II. (April–June).	III. (July–Sept.).	IV. (Oct.–Dec.).
	Boys (all ages).			
Number ..	306	291	275	280
Av. increase	0·4298 ± 0·008	0·7309 ± 0·008	0·5063 ± 0·006	0·3239 ± 0·007
S.D.	0·2097	0·1960	0·1455	0·1644
	Girls (all ages).			
Number ..	351	332	328	332
Av. increase	0·4318 ± 0·008	0·7417 ± 0·008	0·4959 ± 0·006	0·3558 ± 0·005
S.D.	0·2098	0·2237	0·1616	0·1478

As is seen from Table II., in both sexes the sequence in growth in height is the same; the increase is greatest in the second period, slackens considerably in the third, still more in the fourth, and begins to rise again in the first. When tested statistically, the difference between the increase at any two periods is significant, even in the case of the smallest difference—i.e., between periods I. and III. The period of maximum growth is thus in agreement with that found by Malling-Hansen and Frank in countries with seasons approximately the same.

Table III. gives the data for weight increase separately for the different ages.

The increases in weight do not correspond from age to age so closely as the increases in height. In six groups out of ten the greatest weight increase is at weighing III. (after the summer holiday); in five groups the second greatest increase is made in period IV., the third greatest in period I., and in six groups the smallest in period II.

TABLE III.—*Weight: Mean Increase in Pounds.*

Age in years.	Number	Period. I. (Dec.–March).	II. (April–June).	III. (July–Sept.).	IV. (Oct.–Dec.).
		Boys.			
7	59	1·2670	1·1342	1·3061	1·3046
8	40	1·6000	0·3750	1·4688	1·3546
9	26	0·8750	0·9688	1·5313	1·5937
10	111	1·7387	0·5764	1·8236	1·3835
11	70	1·3286	0·8043	2·0208	1·5682
		Girls.			
7	68	0·8603	1·0936	1·7182	0·8360
8	52	0·9279	1·3413	1·2549	1·2600
9	25	0·5800	1·7174	1·6250	1·7500
10	139	1·0665	1·0213	1·9421	1·3358
11	67	1·3023	1·2083	2·2083	1·4084

Table IV. gives the data for the boys of all ages combined and for the girls of all ages combined.

In both sexes much the greatest increase in weight is made in the period that includes the summer holiday; the difference between this increase and

TABLE IV.—*Weight: Mean Increase in Pounds.*

—	Period— I. (Dec.–March).	II. (April–June).	III. (July–Sept.).	IV. (Oct.–Dec.).
	Boys (all ages).			
Number ..	306	291	275	280
Av. increase	1·4677 ± 0·048	0·7423 ± 0·049	1·7070 ± 0·051	1·3741 ± 0·050
S.D.	1·2609	1·2463	1·2582	1·2551
	Girls (all ages).			
Number ..	351	332	328	332
Av. increase	1·0149 ± 0·048	1·1674 ± 0·045	1·8268 ± 0·048	1·2808 ± 0·049
S.D.	1·3467	1·2199	1·2943	1·3230

that of any other period is statistically significant. The boys make in the first period an increase slightly, but not significantly, greater than the fourth period; the girls in the fourth period an increase significantly greater than that of the first period but not than that of the second. The small increase made by the boys in the second period is remarkable. Questions at the June weighing brought out the fact that many children, and more particularly the boys, were practising for school sports.

The cards were scrutinised as to numbers showing no gain or definite loss of weight in the different periods with the following results:—

Period.	*Boys.* Per cent.	*Girls.* Per cent.
I. (Dec.–March)	12·4	22·7
II. (April–June)	23·2	16·8
III. (July–Sept.)	6·5	4·7
IV. (Oct.–Dec.)	12·5	16·5

HEIGHT AND WEIGHT PERIODS COMPARED.

On comparing Tables II. and IV. it is seen that the period of greatest increase in height is not that of greatest increase in weight, nor that of least increase in height that of least increase in weight. Quite definitely the greatest weight increase is in the period following the greatest height increase, as is seen in the

graph. Dividing the increase into two periods, instead of into four there is a very decided difference, in both sexes, in both height and weight.

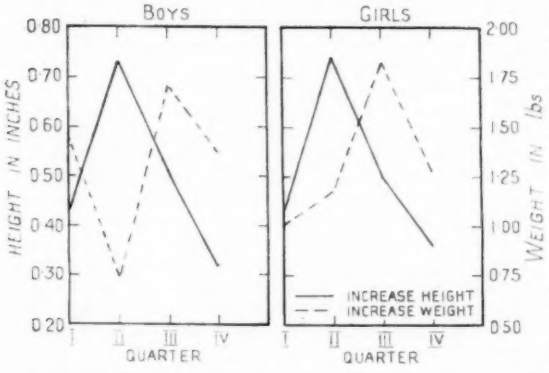
HEIGHT INCREASE (INCHES).

	Boys.	*Girls.*
March–September	1·2372	1·2406
September–March	0·7537	0·7876

WEIGHT INCREASE (IN POUNDS).

	Boys.	*Girls.*
June–December	3·0811	3·1076
December–June	2·2100	2·1823

The increase in height from March to September is almost half an inch greater than that from September to March. The increase in weight is nearly one



pound greater in the second half of the year than that in the first half. The periods of increase in height and weight are shown to be not coincident, but subsequent.

Summary.

(1) Children to the number of 657, aged from 7 to 11 years, from four Scottish towns were measured and weighed in quarterly periods. (2) They showed a very much greater increase in height in the three months from the end of March to the end of June than in any other period, and the smallest increase in height in the months of October, November, and December. (3) The weight increase was greatest in the quarter July, August, September; second greatest in the quarter October, November, December. (4) In the early summer quarter (April, May, June) about 25 per cent. of the boys actually lost weight although increasing in height.

Note.—Since this report was drawn up a paper has been published by Gustav Nylin,[14] giving observations on the growth of Swedish school-children. His results show a seasonal variation in growth, the maximum height increase being from March to May. They also show that maximum increase in height is associated with minimum increase in weight. The results are, therefore, in general agreement with those presented above.

REFERENCES.

1. Orr, J. B.: THE LANCET, 1928, i., 202.
2. Leighton, G., and Clark, M. L.: Ibid, 1929, i., 40.
3. Malling-Hansen, R.: Perioden im Gewicht der Kinder und in der Sonnenwärme, Kopenhagen, 1886.
4. Buffon: Quoted in La Clinique Infantile, 1908, vi., 609.
5. Camerer, W.: Jahrb. für Kinderh., 1893, xxxvi., 249.
6. Schmid-Monnard: (1895) quoted in Vierordt's "Anatomische, Physiologische, Physikalische Daten und Tabellen." Jena, 1906.
7. Bleyer: quoted by Frank (see 10).
8. Porter, W. T.: Amer. Jour. Phys., 1920, lii., 121.
9. Gebhart, J. C.: Publication 132 New York Assoc. to Improve the Condition of the Poor, New York, 1924.
10. Frank, H.: Arch. für Kinderh., 1925, lxxv., 1.
11. v. Wendt, G.: Klin. Woch., 1925, iv., 2389.
12. Emerson, H.: Jour. Amer. Med. Assoc., 1927, lxxxix., 1326.
13. Mann, H. Corry: Medical Research Council Special Report Series No. 105, 1926.
14. Nylin, G.: Acta Med. Scand., 1929, Suppl. xxxi.

MATERNAL MORTALITY AND MORBIDITY.

INTERIM REPORT OF DEPARTMENTAL COMMITTEE OF THE MINISTRY OF HEALTH.

(*Concluded from p. 324.*)

A National Maternity Service.

IN the eighth chapter of the interim report the history of the gradually increasing interest taken by the State in the provision of an adequate maternity service for the whole nation is outlined. Since 1919 there has been created under the Ministry of Health a maternity service of considerable magnitude, and in 1924 a circular was issued recommending antenatal supervision by the practitioner and midwife, the provision of sufficient maternity beds for abnormal cases by the local authorities, supervision under the Midwives Act of practising midwives, investigation of cases of maternal mortality and morbidity, and the dissemination of educational propaganda to the public. In considering the question of maternity benefit the Royal Commission on National Health Insurance decided that ultimately medical, nursing, and institutional services of all kinds should be administered by the local authorities as a part of the medical service, and that cash benefit should be administered separately from this by the approved societies. In addition, the majority report recommended that as soon as funds became available maternity benefit should be expanded to cover medical and midwifery services as well as cash payment. In 1929 the British Medical Association published a scheme for a national maternity service, and the Departmental Committee on the Training and Employment of Midwives produced a similar scheme. In setting out their recommendations for a national service, the Departmental Committee on Maternal Mortality and Morbidity have had both these schemes under consideration, and it is of interest to note the resemblances and differences between the various schemes.

SCOPE OF THE SERVICE.

In the scheme provided by the British Medical Association as well as in that now formulated by the Committee, the service is designed to apply, not only to insured persons, but to all those not in a position to procure for themselves similar benefits by private arrangement. The service would entail coöperation between the medical profession and practising midwives, probably with representation of both on the committees or subcommittees concerned. The essential points in such a scheme would be the provision of medical antenatal and postnatal supervision, the services of the midwife in every case, and her attendance on normal cases, provision of a consultant when desired by the doctor, and adequate hospital accommodation for those cases which require institutional care. The education of the expectant mother must play an important part in the scheme, since experience shows that neglect of the services available is a potent factor in raising maternal mortality.

POSITION OF THE MIDWIFE.

By the provision of a trained midwife at every labour, whether a doctor is in attendance or not, it is hoped to eliminate the dangerous "handy-woman." The duties of the midwife will be to book the case, to inform the local authorities, to arrange for medical antenatal examinations, to attend the patient during

labour, and to advise her on general hygiene and the value of a postnatal examination. In the British Medical Association scheme it is specially laid down that the midwife should not send the patient to hospital or requisition a consultant on her own responsibility. In order that a sufficient number of well-trained midwives may be available the Departmental Committee, in their scheme, recommend obligatory courses of post-certificate training, and the limitation of the number of cases attended in one year to 100 or 110. They further suggest closer and more helpful supervision, and consider it advisable that eventually all midwives should be drawn from the ranks of State-registered nurses.

POSITION OF THE PRACTITIONER.

The Committee consider that the practical experience of the medical student in midwifery is too meagre and that his work when he is qualified and in practice is often handicapped by adverse economic conditions in the homes of his patients; they therefore recommend adequate payment for obstetric work and better educational facilities. They do not consider that the practice of obstetrics should be limited to a selected panel of practitioners, but that it should be open to the whole profession, as at present. In some areas, however, they think select practitioners working in conjunction with the extern departments of training hospitals might participate in the service, so long as the mother retained her right to a free choice of doctor. The conditions of service for all practitioners would entail the establishment of an advisory medical committee, and the provision of special post-graduate courses in obstetrics. The Committee suggest remuneration by means of an inclusive fee, and differ in this from the British Medical Association, in whose scheme separate fees for antenatal examinations, for confinements, and for postnatal reports are proposed. Another difference arises between the two schemes over the question of antenatal examinations; the Association stipulates that at least one must be made, while the Committee require one at the sixteenth, one at the thirty-second, and one at the thirty-sixth week. In the conduct of postnatal examinations, moreover, the Committee demand a complete investigation of the pelvis and of the general medical condition, while the Association asks merely for a consultation, with examination if necessary. The treatment under the scheme of abnormalities found at the postnatal examination is considered as a probable measure by the Committee. An adequate consultant service is held to be essential under both schemes, the British Medical Association adding a provision that the consultant should usually be obtained locally.

INSTITUTIONAL TREATMENT AND NURSING SERVICES.

The provision of sufficient beds for all abnormal cases and for those normal cases living in unsuitable conditions will be required as part of a complete service; the Association believes that the general practitioner should have the right to follow and attend his patient in hospital, but though the Committee are entirely in sympathy with this principle they feel that the responsibility for the standard of work at any institution should rest in the hands of one person only. The question of sickness benefit for the mother has not yet been considered in detail by the Committee. The possibility that the district nurse might combine midwifery with her general work under the scheme is accepted, provided that the types of sick cases she is attending are suitably restricted; the provision of "home-helps" for the mothers is recognised as desirable. A different fate for the present antenatal clinics is foreshadowed under the two schemes; the Committee see them as centres for consultation between the general practitioner and the obstetrician, while the Association considers that they should develop into centres for training in mothercraft, with the possibility that they might be used in some areas by the general practitioners for the examination of their own cases. The finances of the scheme have not been included in the Committee's report, but have been covered in the scheme put forward by the Association.

Medical Education in Obstetrics.

The importance to the general practitioner of an adequate knowledge of midwifery makes the provision of sufficient training an essential factor in the reduction of maternal mortality. The Committee have given careful consideration to the resolutions of the General Medical Council which have been in operation since 1923, and advise certain revisions. They propose that the period of instruction in midwifery and gynæcology should be increased from three months to six, and that two months of this time instead of one should be spent in resident obstetric work in the hospital. The statement in the Council's regulations that during his period of residence a student "should attend. . . . . twenty cases of labour" has been found by experience to be ambiguous, and the Committee suggest that the number of cases should be increased to 30, and that these should be delivered by the student in person. Extern cases should not be undertaken until at least five cases have been delivered under supervision in the ward. Throughout his six months' training, which should follow six months' work as a surgical dresser, the student should receive systematic instruction in midwifery and gynæcology, so arranged that two-thirds of the time is allotted to midwifery; antenatal work should include the personal examination under supervision of not less than 50 pregnant women, and for instruction in infant hygiene the student should attend at least eight times at an infant welfare centre. Before taking his final examination he should present a certificate stating that these various conditions have been fulfilled, and giving the official position of the certifying officer. Throughout his course the Committee are most anxious that the student should be impressed with the importance of preventive measures in midwifery. The shortage of cases may give the Committee's recommendations the appearance of a counsel of perfection, but they believe that a large number of cases are at present absorbed in training pupil midwives, many of whom do not intend to practise. A redistribution of cases with access, in addition, to the cases confined in council hospitals would, they believe, solve this difficulty.

Anæsthetics in Midwifery.—Puerperal Sepsis.

The Committee consider that light intermittent anæsthesia may be administered to a greater extent than has been the custom up to the present time in normal cases, particularly to primiparæ; such administration should, in their view, be limited to the latter part of the second stage of labour, and should be undertaken by the doctor only. They hold that an increase in the employment of anæsthesia, unless wisely directed and controlled, may lead to an increase in mortality and morbidity. Appendices A, B, and C, which give memoranda on this subject received from the Royal College of Physicians of London, the British College of Obstetricians and Gynæcologists, and the British Medical Association, deserve careful study. The first-named body state

clearly the view that though there are limitations to the wide and general use of sedatives, analgesics, and anæsthetics for the relief of pain in natural labour, if they are administered in hospital under proper medical supervision, the contra-indications are negligible. The British College of Obstetricians and Gynæcologists believe that it would be a simple matter for a fully certificated nurse to receive instruction in the administration of *light* inhalation anæsthesia during her six months' training in an obstetrical hospital or department. They do not think it right for a midwife possessing only the C.M.B. certificate to be entrusted with such a duty, and hold that *deep* inhalation anæsthesia and all other methods of anæsthesia should be administered only by a qualified medical practitioner.

Among the recommendations made by the Committee for measures to limit puerperal sepsis is the proposal that all lying-in hospitals should have facilities for the separation of normal, suspected, and pyrexial cases. This may be accomplished by means of three individual units with separate staffs, one reserved for clean cases, one for cases of sepsis, and one for emergencies. More care in the sterilisation of the hands and the routine use of gloves are advised, as well as a thorough physical examination of the pupils and nursing staff, including a bacteriological investigation of their noses and throats. They emphasise the urgent necessity for more available beds, and for their concentration in a smaller number of hospitals, by which measure it is hoped to increase the facilities for research.

Antiseptic Toilet.

Appendix D contains a memorandum by Dr. L. Colebrook on the sterilisation of the hands. His experiments show that the initial antiseptic toilet as commonly advocated in this country—viz., thorough washing, followed by treatment of the hands for three minutes with perchloride of mercury (0·1 per cent), or lysol (0·62 per cent.) of good quality, will usually succeed, *if it is conscientiously carried out*, in getting rid of any hæmolytic streptococci with which the hands have become contaminated. Washing alone removes the greater number of such streptococci. These procedures do not, however, sterilise the hands in the bacteriological sense. Staphylococci, and sometimes diphtheroid bacilli, can still be cultivated from them. Moreover, as a means to the elimination of streptococci, this antiseptic toilet offers only a small margin of safety. If the washing is perfunctory, or the strength of the antiseptic solutions is reduced, or, again, if the streptococcal contamination of the hands is a heavy one and combined with serous discharges, killing is likely to be incomplete. He notes that iodine (0·5–1 per cent.) or chloramine T (1 per cent.) is more efficient for killing hæmolytic streptococci on the hands than either perchloride or lysol and should be tried, though their use is open to some objections (smell, staining &c.), and it is not unlikely that they would be found too irritant for frequent use. The problem of re-sterilisation of the hands at intervals is even more difficult. The midwife needs for this an antiseptic solution which can be relied upon to kill streptococci on the hands quickly—i.e., within two or three minutes at most—*and without previous washing*. Only iodine and chloramine T have been found to fulfil this condition.

His final conclusion is that in the interests of safer childbirth it is desirable that rubber gloves should be much more widely employed in all midwifery work. Smooth thin gloves can now be bought very cheaply, and, if not heated, wear well. Their sterilisation on the hands is very readily effected, with or without washing—e.g., by perchloride of mercury (0·5 per cent.) or biniodide in spirit (0·4 per cent.) or carbolic acid (1 per cent.).

EUGENIC STERILISATION.

A SHORT time ago the Eugenics Society appointed a "Committee for Legalising Eugenic Sterilisation," and this committee has now published a statement of its position. The pamphlet [1] reviews, first of all, the facts concerning the inheritance of mental deficiency. The three arguments which are adduced in favour of sterilisation as an urgent measure at the present moment are: (1) the inheritance of primary amentia; (2) the fact that high-grade mental defectives are incapable of regulating the birth of children; and (3) the substantial increase in mental deficiency during the last 20 years. The committee emphasise at the outset that their object is to remedy the ambiguity in the law, for it is doubtful whether eugenic sterilisation is or is not at present illegal. They are most anxious not to prejudice the activities of those who work for improved ascertainment, modern institutional accommodation, and better community care, for they are in entire sympathy with these measures, but they consider that sterilisation should be joined to them.

The first section of the pamphlet is devoted to a summary of the views of various authorities on the transmissibility of mental disease. Dr. E. O. Lewis concluded that the feeble-minded high-grade defectives, who comprise some 75 per cent. of the whole, tend to spring from a group composing roughly one-tenth of the total population, who are all subnormal and retarded though not necessarily defective: the "social problem" group. If the fertility of this group could be somehow limited, it is obvious that the number of feeble-minded in the country would be reduced. Quite apart from eugenics, these people bring up their children badly; they live in conditions of squalor and suffer from dirt diseases. Moreover, they are highly fertile and their birth-rate has been little influenced by the broadcast information on contraception. The birth control clinic has been powerless to reach them. Although under natural conditions the children of these people have a high mortality-rate, the maternity and child welfare work of the last 50 years has considerably reduced that mortality. In brief, therefore, the defective-producing class is multiplying at a much greater rate than any other class in the community.

The Harmlessness of Sterilisation: Legal Position.

The report hastens to contradict the erroneous view that sterilisation involves castration, and to explain the operations of vasectomy and division of the tubes. Electrical cauterisation of the tubal openings is mentioned, since it promises to make the sterilisation of the female as simple as that of the male. The legal position has been very well stated by Mr. Justice Humphreys, who was consulted by the British Medical Association. He said:—

"I am clearly of opinion that any medical man who performs the operation described upon a 'defective' within the meaning of that term as defined within the Mental Deficiency Act, 1913, would in the present state of law be

[1] The Eugenics Society, 20, Grosvenor-gardens, London, S.W. Pp. 32. 6*d*.

acting illegally and without any legal justification. I assume the consent of both parents and the excellence of the motives of all concerned, but the fact remains that the operation of sterilisation involves an assault upon and the wounding of the person operated upon. The only legal justification for such an action in regard to a person who . . . . is incapable of giving a reasoned consent, would be that the operation was necessary to the health or well-being of the patient. I do not gather from the case that it is contended that sterilisation would improve the condition, physical or mental, of the defective. The legal risks involved in such an operation would attach equally to all the persons concerned. . . . A jury might be disposed to take the view that in the public interest the conduct of the defendants was excusable, and even praiseworthy, and mitigate the damages accordingly, but, it must not be forgotten, the operation would have deprived the defective of a function which the law nowhere denies to him or her. On the contrary, the elaborate provisions of the Mental Deficiency Act for the safeguarding of such persons might be invoked as indicating that the only means sanctioned by the law of obtaining the desired end—viz., preventing the propagation of the unfit—consists in the segregation of such persons in licensed institutions."

Mr. Justice Humphreys does not refer to voluntary sterilisation, but Lord Riddell has expressed the opinion that it is illegal and constitutes a maim, and is thus a serious offence against public policy. It is, of course, undisputed that sterilisation in the interests of an individual's own health is perfectly legal, and there is some authority for believing that voluntary sterilisation would not be regarded as illegal. Ambiguity, however, remains, and needs to be cleared up before any great advance can be made towards a public policy of sterilisation.

Experience of Other Countries.

The sterilisation laws of the United States, Canada, Switzerland, and Denmark are reviewed. In 19 of the United States the purpose of the laws is both eugenic and therapeutic; in 6 it is purely eugenic, and in 2 it is eugenic, therapeutic, and penal. Seven States provide for compulsory sterilisation only, 7 for voluntary and compulsory sterilisation, and 5 for voluntary sterilisation only. As already stated in these columns,[2] 8515 operations have been officially performed in the United States up to Jan. 1st, 1928, and a careful review of the results is said to have given grounds for a satisfactory report. The evils feared by many people have not been found to follow eugenic sterilisation. The first European legislation was passed in the Canton de Vaud in 1928, and authorised the sterilisation of hereditary sufferers from mental disease or feeble-mindedness. The operation has been quite often performed privately, and the enactment in effect extends the benefits of sterilisation to those unable to pay. No results are as yet available from Switzerland. A Bill regulating eugenic sterilisation in Denmark was passed in the summer of last year in response to the pressure of public opinion. It has some unusual features; for instance, it permits a person convicted of indecent assault to ask in writing for castration. His demand may be granted on the recommendation of specialists and performed at the expense of the State. Mental patients returning to their homes and feeble-minded persons on parole may be sterilised without the consent of their relatives and on the recommendation of the director of the institution, but if an objection to the operation is raised they may be kept in the institution at the discretion of the director. Agitation for eugenic sterilisation laws is being carried on in New Zealand, Sweden, Norway, Germany, and Czecho-Slovakia; a law should come before the legislature of Sweden this year.

[2] THE LANCET, 1929, i., 924, 935.

Arguments For and Against.

The great argument for sterilisation is, in the opinion of this committee, the report of the Mental Deficiency Committee. The arguments against are briefly reviewed and countered. The grossly exaggerated idea that those who believe in sterilisation wish to sterilise every defective they can find and close down the institutions is refuted. Pessimists have argued that sterilisation cannot materially affect the number of mental defectives born, since so many of them come from apparently normal stock; but this point of view has been strongly challenged. On the most unfavourable assumption, it has been calculated that, if all primary aments ceased breeding, the incidence of defect could be reduced by as much as 17 per cent. in a single generation. The rate of elimination would, it is believed by the Committee, in practice be much greater. Defectives rarely produce normal children, and there is no single case on record of two mentally defective parents producing even a gifted or talented person, much less a genius. There is some ground for the argument that if genius is going to be suppressed at all, it will be suppressed by the practice of contraception among the educated classes and not by the sterilisation of the defectives or even by the voluntary sterilisation of the recovered insane. The idea that sterilisation might encourage promiscuity and disseminate venereal disease has not been confirmed by the experience of the United States, and the committee believe that the fear is not justified.

Proposals of the Committee.

The Mental Deficiency Committee proposed that institutions should be regarded rather as flowing lakes than as stagnant pools. Even if the present accommodation were quadrupled, it would probably at a given time accommodate only one-third of the total defective population of the community. The remaining two-thirds should have passed through the institution for stabilisation and training. The Eugenics Society's committee suggest that each defective, before being passed out into the community, should go before a board, which would consider his records in detail and would attempt to persuade him to submit to sterilisation if they thought there was the smallest risk of his becoming a parent. The Board of Control represents the view that guardianship would be a sufficient safeguard for these discharged defectives. The committee feel that this is expecting a great deal; a child may be conceived in a very few minutes, and guardians and supervisors cannot shadow their charges night and day. The committee emphasise the fact that their proposal does not militate against the policy of improving institutional provision. They hold that provision should also be made for the voluntary sterilisation of sufferers from those hereditary mental disorders which come under the heading of insanity, and propose to draft a Bill embodying these ideas. The Bill would provide for voluntary sterilisation in all cases, except that a defective of such a low grade as to be incapable of giving consent might be sterilised with the consent of his relatives on discharge from an institution. In actual practice it is rare for such low-grade cases to be discharged. A third clause would permit voluntary sterilisation of persons suffering from grave physical disease transmissible to children. A full bibliography of eugenic sterilisation is provided.

AN X RAY ROOM FOR HARROW HOSPITAL.—Kodak Ltd., whose works are at Wealdstone, in the area served by Harrow Hospital, are giving up to £1000 for the building and equipment of an X ray room at that institution.

PUBLIC HEALTH SERVICES

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE usual Circular (1119), containing instructions from the Ministry of Health on the annual reports expected from medical officers of health for 1930, were issued in June instead of in December this year in order to give time for the preparation of the extra information asked for. The 1930 report is to be a survey report but of a more simple character than that issued for 1925. Full information is asked for, on lines indicated in an appendix, on the transfer of poor-law functions in pursuance of the Local Government Act, 1929. In view of the proposals of the Government with regard to housing, special attention is to be given to housing defects and the compilation of accurate records with regard to the housing position.

The following are 1929 statistics of two south-coast and one east-coast county borough, and of three county boroughs on or near the Lancashire coal-field.

Name of district and estimated (R.-G.) mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Young child (1–5 yr.) mortality.	Maternal mortality from childbirth.
Brighton .. (146,800)	13·4	14·5	0·98	1·79	2·4	2·8	55/26	23	2·5
Hastings .. (62,620)	12·2	15·9*	0·83	2·36	3·3	3·0	35/18	17	1·3
Gt. Yarmouth (58,110)	14·8	14·4†	0·98	1·72	2·7	2·6	59/25	29	4·6
Blackburn .. (125,300)	12·4	14·9	1·01	1·53	3·9	2·5	80/33	45	9·6
Stockport .. (127,800)	13·3	13·9	0·95	1·59	3·1	2·5	91/47	40	6·5
Bury .. .. (56,830)	13·6	16·4	0·81	1·71	4·2	3·3	79/48	44	6·4

Registered stillbirths per 100 live births: Brighton 4·2, Hastings 3·1, Gt. Yarmouth 2·9, Blackburn 4·8, Stockport 5·6, Bury 5·3.

*Standardised 11·4. †Standardised 12·0.

Noteworthy features of this table are the fact that the low birth-rates and influenza have abolished the natural increase of the populations, and the much smaller chance of survival for children born in the three northern towns.

Brighton.

Dr. Duncan Forbes expresses his regret that the form of report laid down by the Ministry of Health, which is convenient for national and comparative purposes, entails an aggregation of tables which makes dreary reading.

The conditions of housing have steadily improved in Brighton, but there are still cases of five or six sleeping in one room. Since the war the corporation have built 1726 houses and private enterprise 1656. The corporation houses completed in 1929 numbered 246 and 252 more were in course of erection. Over 7 per cent. of these houses are not kept clean, the worst tenants being slum-dwelling families removed with the hope of an improvement in good surroundings. The rent charged to such tenants is 12*s.* per week, for a three-bedroom non-parlour house, but they cannot usually pay more than 8*s.* The number of tuberculous patients requiring refills, after artificial pneumothorax, is on the increase. During the year 22 refills were given at the dispensary and 108 at the sanatorium. Applications for refills from patients operated on elsewhere are complied with. The tuberculosis officer, Dr. A. Neville Cox, considers light treatment unquestionably beneficial in most forms of non-pulmonary tuberculosis, usually after very prolonged treatment. He is not satisfied that artificial light is better than heliotherapy for tuberculous glands, joints, and peritoneums, but it is more dependable and more convenient for patients at work. In lupus and where there is pulmonary disease artificial light, he thinks, has the advantage. Most of the antenatal work is done at the Sussex Maternity and Women's Hospital, antenatal examination being one of the conditions of booking. This hospital employs 20 certified midwives and the number of Brighton patients attended by them was 751. The hospital admitted 117 Brighton patients under an agreement by which the council pays 7*s.* 6*d.* per day. The total cost was £632, of which £359 was paid by the patients and the Sussex Provident Scheme. Up to the end of 1929 sections of the livers of 202 stillbirths had been examined and spirochætes were found in 12 of them. It is concluded that general practitioners do not treat syphilis, since no doses of salvarsan substitute were applied for by them. Doses were, however, supplied to two specialists. An effort is being made to try out a better system of refuse removal with special bins and carts. During the year 12 out of 75 samples of milk examined were found to be tuberculous.

Hastings.

Dr. G. R. Bruce reports that the most used infant welfare centre will be swept away by the Front Line Improvement Scheme, and that it will be difficult to obtain central premises accessible for the mothers of the Old Town. Antenatal work continues to increase, but full use is not as yet made of the 12 beds at Fernbank Maternity Home. The open-air school has given very good results and a second one is to be established for 30 delicate children from the St. Leonard's side of the borough. The Orthopædic Scheme, with the Royal East Sussex Hospital as base, continues to work smoothly and dealt with 52 Hastings cases during the year. Of these, 23 were of pre-school age, 21 were school-children, and 8 were tuberculous. The patients included 11 congenital conditions, 7 cases of infantile paralysis, and 12 of rickets. No new municipal houses were erected, but towards the end of the year the corporation secured an excellent site and a start is to be made with 100 houses. There is a waiting-list of about 600, many of whom live in overcrowded sub-let rooms, in cottages of a low sanitary standard, or in basements. Some of these with large young families cannot pay the rents of municipal houses. Dr. Bruce considers there is a good field locally for the reconditioning and renovating of existing houses, and he would like to see this type of housing reform taken up by private enterprise or a public utility society. Immunisation against diphtheria was adopted with satisfactory results in an institution where there had been a succession of cases for a period of over six months. During 1929 Hastings had 2002·7 hours of bright sunshine and a rainfall of 31·58 inches, this being 3·75 inches in excess of the normal.

Great Yarmouth.

Dr. A. N. Stevens says the hours of bright sunshine recorded were 1624·4 and the rainfall 18·73 inches, as compared with an average of 24·8 inches. Over 57 per cent. of the deaths of Yarmouth residents occurred at ages above 65, and over 32 per cent. at ages above 75. Two-thirds of the confinements in Great Yarmouth are attended by medical practitioners and only one-third by midwives. The Notification

of Births Act is not enforced. Of 865 births, 219 were not notified. The 307 births attended by midwives were all notified. Apparently the notification of puerperal fever is in the same position, seeing that there were four notifications and three deaths. Inquiries made showed that 95 per cent. of 787 babies were breast-fed during the first month and that 78 per cent. of 619 were breast-fed during the fourth month. A difficulty was experienced in filling vacancies for health visitors for nearly the whole of the year. Diphtheria was more prevalent than during any year of the last decade. There were 107 notifications and three deaths. From March to June 22 cases occurred in the East Anglican School for Blind and Deaf Children, and in consequence immunisation was offered for all the scholars whose parents gave their consent.

Blackburn.

Dr. V. T. Thierens submits a table showing that the birth-rate has declined nearly 50 per cent. during the last 10 years; that twice during that period there has been a natural decrease of population, namely, 1·3 per 1000 in 1927 and 2·5 in 1929; also that during the remaining 10 years the highest natural increase was 8·2 per 1000 in 1920, and the lowest 1·0 in 1925. He states that owing to trade depression comparatively large numbers leave the town. The chief industry is cotton-weaving and allied processes. Scarlet fever and diphtheria were unusually prevalent; the former was of a mild type. This disease showed itself in severe form and accounted for 18 deaths, a case-mortality rate of 10·1 per cent. Of the fatal cases, none had received antitoxin before the third day of the disease. An immunisation clinic was opened in November. The Schick test is not being used for children up to the age of 7 years. There were 34 cases of small-pox, all but one of a mild type, and no deaths. Dr. Ella Mackenzie conducts an antenatal clinic twice weekly, which was attended by 70 more women than in 1928. The midwives sent up 92 cases compared with 77 in the previous year. A course of lectures by well-known obstetricians was given to the midwives in order to stimulate their interest in antenatal work. Dr. Mackenzie's investigation of the 15 maternal deaths showed that 2 were associated with eclampsia, 2 with placenta prævia, 2 with puerperal sepsis, 2 with septic peritonitis (one being after an illegal operation), 3 with pneumonia, and 4 with other conditions. Her investigation of 75 still-births showed that in 33 the cause was unknown and that the principal among the known causes were: breech presentation, 7; difficult forceps, 3; placenta prævia, 5; toxæmia, 9; and "probable" syphilis, 3. The deaths of pre-school children were 70 as compared with 43 in 1928, pneumonia showing the chief increase from 11 to 29. There are now 11 nursery classes in Blackburn with accommodation for 450 children under the age of 5 years. The corporation erected 194 new houses and private enterprise 84, and at the end of the year 194 municipal houses were in course of erection. The inclusive weekly rental is 13*s.* 10*d.* for a non-parlour house with three bedrooms; 11*s.* 11*d.* for one with two bedrooms. The waiting-list for municipal houses of the various types at the end of 1929 was 753. Dr. Thierens says the population is comparatively well-housed and that there are no well-defined slums.

Stockport.

Dr. Nicolas Gebbie tells us that the rivers Goyt and Tame unite at Tiviotdale to form the Mersey, and that the borough is situated on both the Lancashire and Cheshire sides. Near the river stands the old part, around which a large town has grown, the chief occupations of which are cotton-spinning, weaving, and doubling, hat manufacture, &c. The inhabitants are chiefly housed in dwellings of the cottage type, "two up and two down," placed in long rows. There is a serious shortage of houses; the "subsidy" houses, erected in 1929, were 112 municipal and 235 by private enterprise. The Municipal Maternity Hospital has accommodation for 16 mothers and 16 babies; in it 165 women were delivered by midwives and 60 by doctors. Patients not attended by a doctor are examined by Dr. Jean Mackintosh prior to discharge and four weeks later at the clinic. Dr. Mackintosh also conducts the four antenatal clinics which were attended by 863 expectant mothers. The midwives coöperate well; 60 per cent. of the midwives' cases attended in 1929 compared with 37 per cent. in 1928. The orthopædic scheme at Stockport Infirmary, associated with the Orthopædic Hospital at Oswestry, is utilised by both the tuberculosis and child welfare departments. The provision of additional accommodation at the Isolation Hospital is under consideration, and another need pointed out by Dr. Gebbie is a destructor to reduce the tip nuisance.

Bury.

Dr. G. Granville Buckley speaks of the increasing neglect of vaccination. During 1929 only 12·8 per cent. of the children born were vaccinated. The high mortality among children of ages 1 to 5 included 9 deaths from pneumonia, 7 from bronchitis, 6 from whooping-cough, and 2 from measles. The notifications of diphtheria (165) were more numerous than ever before, but the case-mortality was only 3 per cent. Bury joins in the county orthopædic scheme and sent 10 pre-school children to the county clinic, one of whom was admitted to Biddulph Hospital. The V.D. officer, Dr. J. Holker, says that practitioners use the clinic increasingly. Since many cases are only sent to him in the secondary stage, he infers that some practitioners do not realise that spirochætes can be detected in a primary sore before the Wassermann reaction is positive. He points out that smears should be taken before treatment and that soft chancres are frequently syphilitic. The sewage of the borough is of a complex nature and includes trade wastes from tanneries, fell-mongers, wool scouring, hatters, breweries, and gas liquor. Three separate systems follow the sedimentation tanks, including an activated sludge unit. A further extension has been necessitated by the admission of spent ammoniacal liquor from the gas works. A sludge plant has been installed but at present the sludge is disposed of on lagoons. Of the last six samples of effluent taken by the inspectors of the Mersey and Irwell joint committee two were satisfactory and four were bad. During the year 213 half-hour observations of black smoke were taken and four firms exceeded the limit of two minutes black smoke per half hour, the average emission being six and a half minutes per half hour. Appropriate remedial steps were taken. Bury has had a model public abattoir since 1903 (when all the private slaughter-houses were abolished), which could deal with three or four times the present call upon it.

A MIDDLESEX CONVALESCENT HOME.—Lord Rochdale, Lord-Lieutenant of Middlesex, recently opened a convalescent and holiday home for necessitous Middlesex school-children at Collington Manor, Bexhill. It has been purchased and equipped by the Middlesex King Edward VII. Memorial Fund.

HOSPITALS FOR THE SCOTTISH ISLES.—The Scottish Department of Health has made a grant of £6000 for the erection and equipment of a Cottage Hospital in Islay; the cost of maintenance will be borne locally. It is understood that the Bute Hospital in South Uist will shortly be dealt with by the Department.

MANCHESTER BABIES' HOSPITAL.—The report states that there were 474 admissions and 70 deaths during the past year, a percentage of 14·73. The average stay of all cases was 60·50 days, and of fatal cases 27·48 days—18 cases died within 48 hours of admission. The out-patients' department has passed the experimental stage and is now firmly established, 644 cases having been treated during the first year.

SCHOOL MEDICAL SERVICE.

—	No. on roll.	Average attend-ance.	Routine inspec-tion.	Special exams. and reinspec-tions.	Percentage of defects.
Leeds	73,613	—	20,384	68,990	35·7
Gillingham ..	8,137	7,299	2,846	2,279	16
Eastbourne ..	4,928	4,391	1,653	6,803	10·7

Leeds.

On the subject of malnutrition, Dr. Algernon Wear truly remarks that "many of these children are in need of a good midday meal and more sleep." His assistants, Dr. Stockwell and Dr. Wood, point out that "the open-air school as a method of treatment (including correct feeding and malt and oil) is incomparably ahead of anything we do or can hope to do by the artificial sunlight treatment," and it is satisfactory to note that plans have already been prepared for an open-air school at which the children will have the benefit of good diet, rest, fresh air, sunlight, and other favourable influences.

An interesting experiment on the effect of extra milk is described. A comprehensive scheme was undertaken in coöperation with the medical officer of health (who controlled the quality and purity of the milk), the Dairymen's Association, the National Farmer's Union, and the head teachers. The number of children to whom extra milk was given averaged over 20,000, their parents paying 1*d*. a day. At the time of writing the scheme has been in operation for only three months, but comparisons with other children show that except for boys of 7 and 11 the average weight of those receiving the milk is substantially above the average for the city.

Children taking part in public entertainments are exposed to many adverse influences, and at the medical examination it was found that many of them were below the average standard of health and suffering from overstrain. "It would appear," says Dr. Wear, "that for such a strenuous life only the exceptional physical type should be certificated," but in practice, of course, these children are often of a type which is unusually susceptible to nerve strain. Mr. Capes, the inspector for employment of children, in his appended report questions whether the minimum age for their certificate should not be raised to 14 and whether the latest hours allowed should not be 9 P.M. All these suggestions are worthy of careful consideration, and in our opinion it would be well if all authorities who license theatrical children realised their responsibilities and maintained a uniform standard.

The authorities in Leeds are to be congratulated on maintaining a nursery school and also on the attention that is being called to the needs of stammerers. It may appear contradictory to the ideals of progress that a decrease in the number of attendances at the treatment clinics should be welcomed, but it is explained that it has been felt for some time that children were forming a "clinic habit," because they enjoyed the change from lessons. This year the attendances have been kept down by stricter observation, especially of trivial complaints, and at one clinic minor ailments are to be dealt with at 4 P.M. in order to thwart the juvenile ingenuity.

Gillingham.

Comparisons are proverbially undesirable, but it is impossible to ignore the fact that there are several towns smaller than Gillingham which have made more complete arrangements for the treatment of defects and for the care and education of exceptional children, though the efficiency of the medical officers is evident. Some orthopædic cases attend St. Bartholomew's Hospital, Rochester, but there is no orthopædic scheme. There are no systematic in-patient arrangements for dealing with tonsils and adenoids; patients remain for some hours after operation and are re-examined by the house surgeon, and may be kept in overnight if there are exceptional features. Those sent home travel by the corporation ambulance. The dental scheme is not complete enough to allow of the re-examination of every child annually, but this ideal is attained only by a comparatively few very progressive towns; at Gillingham the dentist's sessions have been increased from three to five a week, so that it was possible to examine all children from 6 to 10 years old. The anæsthetist for dental work is Dr. Meta Dunlop, who acts also as part-time assistant school medical officer. Here, again, Dr. W. A. Muir, who acts both as medical officer of health and school medical officer, is at a disadvantage compared with many of his colleagues, for Dr. Dunlop devotes to school inspections only seven sessions a fortnight. With the inclusion of the parish of Rainham and other demands on his time it is clear that Dr. Muir will need more help.

No nursery school has been established in the borough nor are there special schools of any kind; the need for an open-air school appears particularly urgent. Eighteen exceptional children are, however, maintained by the education committee in various special schools outside Gillingham, and though there is no special school for mental defectives there is an active branch of the Kent County Association for Mental Welfare which successfully maintains an occupation centre.

The number of cases of malnutrition recorded at medical inspections is only six, but nearly 200 children were having free dinners last year. In July, 1929, Dr. Muir suggested to the committee that instead of this free dinner a pint of milk should be given daily, the cases being recommended by school medical officers on medical grounds and by head teachers on financial grounds. Shortly after this scheme began a number of other parents asked for their children to have milk, stating that they were willing to pay for it. Special care was taken to obtain the best milk in good condition, and the scheme, which came into operation on Nov. 4th, promises very well.

Though the facilities at Gillingham are not at present extensive it is evident that the medical inspectors are held in high regard, for the proportion of parents attending inspections was 80 per cent. at all ages and 94 per cent. for entrants.

Eastbourne.

Eastbourne is exceptional in the small proportion of children to the general population. The percentage fell from 21·19 in 1891 to 16·4 in 1921, and is still falling. Yet in some quarters more accommodation is needed because through the housing schemes some families have moved from the centre to the border of the borough. The percentage of attendances (89·1) is good and shows the careful activity of the school attendance officers. In view of the small numbers, the arrangements for the treatment of defects are very satisfactory, and there are nine varieties of clinic in the borough. There is also an open-air school which is giving good results. Dr. E. H. B. Coghill, the assistant school medical officer, says that the children admitted to this school, although classified into those suffering from anæmia, debility, malnutrition, and outgrowing strength, show in fact a very similar picture in each case, and that the accompanying report from the old school is almost invariably the same, the comment being "listless," "easily fatigued," "poor concentration," "poor progress in school work generally." The average period during which the children remained at the school was 25 months, and in no case during the year was it found necessary to readmit a child previously discharged as cured. These results are attributed largely to the keen interest taken in the medical side of the work of the headmistress, Miss Martin, and her staff. The arrangements for exceptional children are also good.

Among other activities noted by Dr. W. G. Willoughby in his report are: (1) the supply of milk to 364 children, due to the enterprise of the head teachers; (2) health propaganda by the

issue of 2000 copies each month of a monthly journal *Better Health* through the schools; (3) school camps held in July; (4) physical training organised by Captain Stainfield; (5) in secondary schools flat-foot and slight degrees of spinal curvature have been improved by exercises, and in the girls' school foot troubles are less frequently complained of since the all-day use of "plimsols" has been vetoed and house shoes with low heels have been substituted.

MENTAL HOSPITAL REPORTS.

THERE were 675 patients on the books of the CITY OF LONDON MENTAL HOSPITAL at STONE on the last day of last year. During the year 121 certificated and 100 voluntary patients were admitted. The recovery-rate of the patients under certificate was 44 per cent. of the direct admissions, and their death-rate 7·8 per cent., while 40 per cent. of the voluntary patients left the hospital recovered or relieved. There was very little illness during the year. General paralysis has been successfully treated by malaria, and the operating theatre, X ray room, dental surgery, and laboratory have all been in constant use. Parole beyond the estate was allowed to 58 men and 24 women, and within the grounds to 88 men and 137 women. Two male and three female wards are administered on the open-door principle. Three nurses and three attendants obtained their R.M.P.A. certificates, two of them with distinction.

The BRIGHTON COUNTY BOROUGH MENTAL HOSPITAL had 875 patients in residence on Dec. 31st last. The recovery-rate for the year was 42·2 per cent. and the death-rate 10·1 per cent. Five general paralytics received malarial treatment at Hellingly and one has been discharged. On an average there have been 18 male patients and 39 females on full parole, and an additional 53 men on parole within the grounds. A number of patients have had week-end leave. Some difference of opinion has arisen in the committee as to the best site for the proposed admission hospital, but it is hoped to proceed with the building before long. A new cricket pitch has been made in the park. The dental surgeon attended 750 patients during the year. Since the out-patient clinic opened at Brighton in January, 1926, 371 patients have attended; there were 90 new cases during 1929. Three patients have been certified under the Mental Deficiency Act, but none at all under the Lunacy Act. Not one of the 200 patients admitted to the mental hospital during the year from Brighton had attended the out-patient clinic.

Of the two mental hospitals under the ESSEX AND COLCHESTER COMMITTEE, that at BRENTWOOD had 1774 patients under care at the end of last year. The death-rate was 6·22 per cent., the lowest on record for this institution, despite the fact that 16 patients died of general paralysis and 15 of cardio-vascular degeneration. Post-mortem examinations were made in 81 per cent. of cases. The general health was very good and there were no epidemics. General paralysis has been treated by malaria with encouraging results, and other methods of producing fever are being tried. The visiting surgeon has performed several urgent operations and the dentist has attended twice a week. The dispenser is also an optician, and has done a good deal of sight-testing. For the first time the home dairy herd has supplied all the milk required, some 620 quarts daily, and nearly all new patients show a marked gain in weight. The hospital has for some time been overcrowded, and the opening of the new nurses' home will give some relief, as well as enabling the staff to spend off-duty hours away from the wards. Ten men and 16 women obtained their R.M.P.A. certificate during the year, three of the men with distinction. Electricity is now available throughout the hospital and is proving a great boon. A general purposes machine has been set up in the kitchen and a refrigerating plant is to be installed. New clinical rooms have been equipped in the male infirmary and admission wards. The weaving and handicraft department keeps many patients usefully occupied. Three female and five male wards are open, and parole and week-end leave are freely granted. Patients are clothed in dresses of different colours and style and the more responsible ones are allowed to choose the fashion of their clothes.

The hospital at SEVERALLS had 1819 patients in residence at the end of the year. The death-rate was 9·24 per cent., and the general health was satisfactory except for a few cases of colitis during the autumn. The recovery-rate was 25·8 per cent. Occupational and ultra-violet light therapy are giving very satisfactory results. The open-air treatment of acute cases has proved an unqualified success and the new canteen promises to be most useful. A pathological laboratory has been completed and will soon be in use, but the X ray plant is nearly obsolete and needs replacing. Three male and two female wards are open to the grounds and four other wards to gardens. Parole and leave are given as far as possible. The nursing staff are prepared for examination, and 92 men and 46 women have now passed their final.

On the first day of this year there were 714 patients at the LEICESTERSHIRE AND RUTLAND MENTAL HOSPITAL, NARBOROUGH. The recovery-rate for the year was 40·88 per cent. and the death-rate 8·22 per cent. One ward on either side is administered on the open-door principle; 12 men have full parole and 40 have parole within the grounds. Nearly 6000 articles of clothing were made in the hospital during the year, and the tailors' and shoemakers' shops were also kept busy.

The EAST RIDING MENTAL HOSPITAL at BEVERLEY housed 603 patients on March 31st of this year. The recovery-rate was 38 per cent. and the death-rate 10·68 per cent. Autopsies were performed whenever permission was granted—i.e., in 83 per cent. Hydrotherapy has given very satisfactory results in acute cases, and a continuous bath is to be installed in the female admission ward. Encouraging results have been obtained from the use of tryparsamide in neurosyphilitic cases and malarial therapy is used for cases which do not respond to tryparsamide. Forty patients are allowed parole outside the estate, and 12 within the grounds; the men greatly enjoy the local race meetings. A cinema has been installed. Arrangements have been made to accommodate mentally defective children elsewhere; this will relieve congestion in the hospital and be better both for the children and for the hospital patients. A consulting surgeon has been appointed. The dentist paid 26 visits during the year and examines all new patients systematically. There is a shortage of female nurses, but 54 per cent. of the men and 17 per cent. of the women hold the R.M.P.A. certificate.

The GLAMORGAN COUNTY MENTAL HOSPITAL at BRIDGEND had 2030 patients on the register at the end of last year, and overcrowding is acutely felt. The recovery-rate was 27 per cent. and nearly all recovered patients showed an increase of several pounds in weight. The death-rate was 8·2 per cent. The general health was good, except for an influenza epidemic, four cases of dysentery, and one of erysipelas. The visiting surgeon performed an operation for appendicitis and 300 patients received dental treatment. Plans are in hand for the erection of an admission hospital, convalescent home, and nurses' home. The inmates are employed as far as possible, but there is no occupations officer. Full parole is allowed to 9 men and limited freedom to 90, but no women have this privilege. The death-rate from tuberculosis is higher than the average of mental hospitals—viz., 10·1 per cent.—and modern methods for treating general paralysis are not yet in use. Of the 25 candidates, 10 men and 5 women obtained their R.M.P.A. certificate during the year.

The JOINT COUNTIES' MENTAL HOSPITAL at CARMARTHEN housed 659 patients on March 31st last.

The recovery-rate was 35·2 per cent., and 91 per cent. of the patients who completely recovered were in residence for less than a year. The death-rate was 10·62 per cent. and the general health was unsatisfactory. There was influenza in the spring, 13 cases of diarrhœa, 4 of dysentery, 3 of enteric, and 8 of tuberculosis. Two surgical cases were sent to the infirmary for treatment. The dentist saw 158 patients. A new water-supply has been completed. Patients are being instructed in rug making and an attempt is to be made to expand the scheme of industries. Parole is allowed to 4 men outside and 84 inside the estate, but not to any women, and only 10 patients were allowed out on trial. Four nurses passed the final examination for the R.M.P.A. certificate.

PRIVATE INSTITUTIONS.

The JAMES MURRAY'S ROYAL ASYLUM, PERTH, presents its 103rd report this year. There were 192 patients on the register on April 1st last, but owing to lack of accommodation a number of applications for admission had to be refused. A new reception hospital is being built at Gilgal and will be available, it is hoped, before the winter. During the year 24 certified and 57 voluntary patients were admitted. Seventeen certified and 20 voluntary patients were discharged recovered, and 9 voluntary patients were certified. The death-rate was 12·43 per cent. and post-mortem examinations were made in 8 of the 22 cases. The institution had the misfortune to suffer from a fire on April 19th. The damage has been assessed at £2400, but would have been greater had not the wing been rebuilt in 1837 with fire-proof arches. The routine of the institution was maintained remarkably well. Five nurses and four attendants obtained their R.M.P.A. certificate during the year.

At BARNWOOD HOUSE, near GLOUCESTER, there were 141 patients at the end of last year, and also 18 voluntary boarders. There is a great demand for admission to the Manor House, where voluntary boarders are received. The recovery-rate was 32·5 per cent. and the death-rate 7 per cent. There was an epidemic of influenza in the spring, but otherwise the health was good. A patient suffering from taboparesis improved under malarial treatment, and three cases of confusional insanity were found to be suffering from an unusual type of intestinal toxæmia. The visiting pathologist and the dentist have both extended their work, and an ultra-violet ray lamp has been purchased. The electrification of the hospital was completed during the year and a cinema and a refrigerator have been provided. Arts and crafts are taught to the ladies during the winter, and a seaside house is taken for the summer. In the competition of the Gloucestershire Milk Recording Society the institution obtained the Cadbury Cup and Gold Medal for clean milk. Another nurse obtained her certificate, bringing the total certified or registered to 21 men and 18 women

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 2ND, 1930.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 70 (last week 109); scarlet fever, 1778; diphtheria, 1108; enteric fever, 92; pneumonia, 431; puerperal fever, 46; puerperal pyrexia, 111; cerebro-spinal fever, 4; acute poliomyelitis, 13; acute polioencephalitis, 6; encephalitis lethargica, 13; continued fever, 1; dysentery, 22; ophthalmia neonatorum, 111. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on August 5th–6th was as follows: small-pox, 218 under treatment, 10 under observation; scarlet fever, 1779; diphtheria, 2007; enteric fever, 38; measles, 219; whooping-cough, 83; puerperal fever, 15 (plus 8 babies); encephalitis lethargica, 119; "other diseases," 20. At St. Margaret's Hospital there were 14 babies with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 13 (1) from measles, 7 (3) from scarlet fever, 18 (0) from whooping-cough, 35 (17) from diphtheria, 37 (7) from diarrhœa and enteritis under two years, and 12 (0) from influenza. The figures in parentheses are those for London itself.

No great town reported more than 1 death from measles with the exception of Liverpool with 2. Liverpool also reported 4 deaths from whooping-cough, Bristol and Leeds each 2. Four deaths from diarrhœa were reported from West Ham, 2 each from Willesden, Portsmouth, Leicester, Derby, Liverpool, Manchester, Rochdale, Leeds, and Sunderland.

The number of stillbirths notified during the week was 265 (corresponding to a rate of 37 per 1000 births), including 45 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Capt. L. Warren to *Pembroke*, for R.N. Hospital, Chatham.

Surg. Comdr. G. S. Harvey to *Pembroke*, for R.N. Hospital, Gt. Yarmouth.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Sub-Lts. W. J. Poole and V. S. Hughes-Davies to be Surg. Lts.

Proby. Surg.-Lts. G. M. Tanner and A. D. Hepburn to be Surg.-Lts.

Proby. Surg.-Lts. (D) to be Surg.-Lts. (D): F. A. Pearse, A. W. Y. Price, and R. W. Stevens.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. E. G. Anthonisz, Reg. Army Res. of Off., to be Maj., whilst re-empld. under Art. 507 (b), Royal Warrant for Pay and Promotion, 1926, and relinquishes the rank of Lt.-Col.

Maj. A. D. O'Carroll retires on ret. pay, and is granted the rank of Lt.-Col.

Maj. D. T. Richardson to be an Asst. Professor at the R.A.M. Coll.

Maj. (now Lt.-Col.) A. Dawson to be an Asst. Professor at the R.A.M. Coll.

ARMY DENTAL CORPS.

The undermentioned Capts. to be Majs.: G. A. G. Jones, E. H. C. Caute, C. V. Walker, M. J. O'Reilly and T. Pearson.

Lt.-Col. & Bt. Col. J. A. Seymour, having attained the age for compulsory retirement, is placed on retd. pay.

Maj. J. V. M. Byrne to be Lt.-Col., vice Lt.-Col. & Bt. Col. J. A. Seymour.

Lt. P. M. Margand, Dental Surg., relinquishes his temp. commn. on appt. to a non-permanent commn. in the R.A.F.

RESERVE OF OFFICERS.

Maj. A. H. Hayes, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Lt.-Col. D. S. Sutherland to comd. 12th (2nd Western) Gen. Hosp.

Capt. F. B. Chavasse resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

Capt. S. Orchard resigns his commn.

J. F. Wilde (late Temp. Capt., R.A.M.C.) to be Capt. with seniority.

Lt. W. R. Nash (late R.G.A., Spec. Res.) to be Lt.

J. W. Graham to be Lt.

The King has conferred the Territorial Decoration upon Capt. K. B. Dickson.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Lt.-Col. J. Ramsay, from Active List, to be Lt.-Col.

Maj. H. J. Dunbar, having attained the age-limit, retires and retains his rank, with permission to wear the prescribed uniform.

Lt. T. A. A. Hunter, from Active List (Supern. for serv. with O.T.C.), to be Lt.

ROYAL AIR FORCE.

Flight Lt. A. F. Cook ceases to be seconded for duty with the Trans-Jordan Frontier Force.

Denal Branch.—The undermentioned Flight Lieutenants (Temp. Captains, General List, Army Dental Surgeons)

are granted non-permanent commissions as Flight Lieutenants: J. M. Jamie and H. D. Humphreys.

INDIAN MEDICAL SERVICE.

Lt.-Col. H. R. Nutt to be Col.

The undermentioned officers retire: Lt.-Cols. D. McN. Taylor, D. Heron, and G. I. Davys.

COLONIAL MEDICAL SERVICES.

Dr. J. W. P. Harkness, Senior Medical Officer, Palestine, and Dr. N. M. Maclennan, Health Officer, Kenya, have been promoted Deputy Director and Senior Medical Officer respectively, to the Department of Health, Palestine.

The following appointments have been made: Miss F. A. Adam, Lady Medical Officer, Gold Coast; and Dr. P. F. S. Court, Dr. G. V. A. Griffith, and Dr. J. B. Mackie, Medical Officers, Hong-Kong; Dr. P. J. Bourke has been appointed a Medical Officer in the West African Medical Service, and Dr. A. Cathcart, Medical Officer at Sierra Leone, West African Medical Staff.

DEATHS IN THE SERVICES.

Surg.-Capt. Douglas Duke Turner, R.N., retired, who died at the age of 53 in the Royal Naval Hospital, Haslar, on August 4th, qualified with the conjoint diploma in 1900 and entered the Naval Service in 1904. He was promoted to staff surgeon some eight years later, and was medical officer to the cruisers *Sappho* and *Devonshire*, and after his promotion to Surg. Commander in 1917 he occupied a similar position in the cruiser *Concord*, the battleship *Resolution*, and the *Defiance*, torpedo schoolship at Devonport. He retired with the rank of surgeon captain, 1927.

CORRESPONDENCE

UMBILICAL HERNIA IN INFANTS.

To the Editor of THE LANCET.

SIR,—May I be allowed to say a few words about Mr. C. P. G. Wakeley's article on this subject which appears in the "Modern Technique in Treatment" series in your issue of August 9th. Inasmuch as the views expressed in this article are in conflict with what is generally taught and practised in our welfare centres, it is important that both sides of the question should be discussed so that the truth may prevail. Mr. Wakeley claims that the condition is more common now than it was 20 or 30 years ago. This statement is unsupported by statistical evidence, and although I have none to offer, I may state—for what it is worth—that this is quite contrary to my own personal experience. Both in private and in hospital practice I am under the impression that I see far fewer cases of this kind now than I did formerly.

Again, one of the causes assigned by Mr. Wakeley for umbilical hernia is artificial feeding, and he adds that artificial feeding is more generally employed now than 20 or 30 years ago. But is this so? I very much doubt it. Most welfare centres and well-informed medical practitioners now make very successful efforts to popularise breast-feeding, especially during the first few months of life, when the character of the feeding is most likely to affect the issue in question. My general impression is that I see more cases of umbilical hernia among breast-fed infants than among artificially fed infants. This may be because there are more breast-fed infants, or it may be that overfeeding is more likely to occur under uncontrolled breast-feeding than under controlled bottle-feeding.

Another cause of umbilical hernia assigned by Mr. Wakeley is the almost universal abandonment of the binder, and he gives it as his opinion that it is of the greatest importance that infants should wear abdominal binders until at least six months old. If this advice, he says, were followed, "there would be far fewer cases of infantile umbilical hernia attending our hospitals." For my part, I think that if this practice were adopted there would be a larger number of infants attending our hospitals for digestive and other abdominal troubles. I have seen several cases of inguinal hernia brought about by the use of the tight circular binder employed to control umbilical hernia—a very natural consequence owing to the rise in abdominal pressure to which such treatment would tend.

Mr. Wakeley gives very full particulars of the operation he advocates for umbilical hernia. In the whole of my experience I have never found it necessary to resort to operative treatment for this condition. The very simplest precautions will prevent the development of umbilical hernia, and the commonsense use of a little strapping properly applied, but not quite in the manner described in the article referred to, will cure the condition. I am told that quite a large number of Zulu infants, the majority of whom are breast-fed, as well as many other South African native infants suffer from umbilical hernia, but that the condition is never found amongst the adult population, for the reason that spontaneous cure always occurs when the recti muscles become adequately developed—a result which the binder would certainly delay.

Although at the present time I have no statistical evidence on the points raised, I understand from Dr. Jean Smith, the registrar at the Infants Hospital, that she will try to produce some with respect to the relative frequency of umbilical hernia amongst breast-fed and artificially fed infants, and also with respect to the frequency of the condition among all classes of infants attending the hospital.

I am, Sir, yours faithfully,

ERIC PRITCHARD.

Harley-street, W., August 9th, 1930.

TREATMENT OF PULMONARY TUBERCULOSIS IN SWITZERLAND.

To the Editor of THE LANCET.

SIR,—Dr. Harrison's general proposition, that rest and prescribed exercise occupy a more important place in the treatment of pulmonary tuberculosis than climate, is in conformity with modern views. The point will bear emphasis over and over again, for the majority of patients, sanatorium committees, and even medical practitioners are slow to appreciate its full significance. I cannot, however, agree with Dr. Harrison when, in a sweeping generalisation, he decries the treatment conditions in the high Alps.

Having visited the chief sanatoria of Davos, Arosa, Leysin, and Montana I have been impressed with the cold, dry, windless atmosphere, with brilliant sunshine generally present in these places in winter, and contrasting so favourably with the damp misty conditions which so often prevail in England. Especially at Montana are climatic conditions particularly favourable. There one lives above the clouds, and looks down on the "sea of mist" hundreds of feet below. The sunshine record, I believe, is among the best of all Alpine villages. Most of the patients I saw were British. English was freely spoken. The British sanatorium there was not overheated like so many which cater for continental patients. The patients were far from being bored by the eternal snow. Many with whom I conversed were watching with amusement the sport on the ice

rink, the toboggan and ski runs, while sitting or strolling in brilliant sunshine. The whole atmosphere was joyful, uplifting, and could be, at the same time, profoundly restful. Compared with it, the average humid winter day in England is gloomy to a degree.

Another point of the greatest importance in favour of the Swiss curing stations is the wealth of specialist medical talent available at each centre. Tuberculosis has been the prime medical interest of the whole coterie of doctors in each centre for many years. There is a vast accumulated experience of the disease. Every advance in treatment is exhaustively discussed and tried out with avidity. While every doctor specialises in tuberculosis, there is, moreover, a specialist for each branch of the subject, be it X ray diagnosis, oleothorax, thoracoplasty, or any known treatment. In this respect each centre may claim to be a complete unit for the treatment of tuberculosis.

Doubtless in some institutions the discipline of routine treatment may not be so rigid as it should be, but, as far as I could judge, this did not apply in Montana, where also the arrangements are particularly well suited to British people.

I am, Sir, yours faithfully,

H. STANLEY BANKS,
Medical Superintendent, Isolation Hospital and Sanatorium, Leicester.

August 11th, 1930.

THE DUTCH PESSARY.

To the Editor of THE LANCET.

SIR,—I am glad that Dr. Helena Wright has called attention to the importance of using a second contraceptive with a Dutch rubber pessary. Where it is important to prevent conception I believe the physician should advise a carefully fitted rubber pessary, lubricated with a contraceptive spermaticide such as Dr. Haire recommends and, in addition, a soluble pellet or pessary containing quinine or other substances of a well-known brand, which must be freshly prepared. I recommend douching next morning before and after the removal of the rubber pessary. I think disappointment has occurred in the past through using pessaries unnecessarily large. My own experience is that the majority of women are best fitted with 50–55, and less commonly 60 mm. Each case has to be judged separately. Women with a well-formed os, where there is no tear, may find the check pessary with the self-retaining rim perfectly satisfactory. In a few instances no form of rubber pessary is of the slightest use; in this case a soluble pellet or pessary and a rubber sheath should be recommended when it is necessary to prevent conception. In my opinion, this last is the most reliable method.—I am, Sir, yours faithfully,

ELIZABETH SLOAN CHESSER, M.D.

Harley-street, W., August 12th, 1930.

MEDICAL NEWS

University of Cambridge.

At a congregation on August 2nd the following degrees were conferred:—

M.D.—H. V. Dicks and G. W. Bamber.
M.B., B.Chir.—*C. I. C. Gill, R. E. Barnsley, and J. D. Simpson.
M.B.—F. A. Richards, E. J. Pye-Smith, R. L. Osmaston, and B. C. Tate.
B.Chir.—*A. C. Crooke, *H. W. Sadlier, R. S. Stacey, B. C. Nicholson, P. G. Levick, V. P. Paxon, I. J. Franklen-Evans, and J. S. S. Fairley.

* By proxy.

Mr. Eric Gordon Holmes, M.A., M.B., B.Chir., has been elected a non-stipendiary Fellow of Downing College. He was formerly a scholar of Christ's College and a student at St. Bartholomew's Hospital. In 1926 he was appointed assistant to the Downing Professor of Medicine, and is engaged in research.

St. Bartholomew's Hospital and College.

The Old Students' annual dinner will be held in the great hall of the hospital at 7 P.M., on Wednesday, Oct 1st, with Mr. L. B. Rawling in the chair.

Tour of Medical Italy.

The annual medical tour to spas and other health resorts in Italy, organised by the Italian State Tourist Department, will take place from Sept. 10th to 26th. Among the places to be visited are Merano, Carezza (Karersee), and other Dolomite resorts, Riva and Gardone on Lake Garda, Montecatini and Viareggio. An English-speaking Italian doctor accompanies the party. Full information from the Italian Travel Bureau, 16, Waterloo-place, London, S.W.1.

The late Mr. J. T. Ainslie Walker, F.I.C., F.C.S.

The sudden death occurred of Mr. J. T. Ainslie Walker on July 27th. He was educated at Watson's Boys' College and at Edinburgh University, where he studied mainly chemistry. His researches into the values of disinfectants and antiseptics, conjointly with the late Samuel Rideal, resulted in the Rideal-Walker coefficient test for standardising bactericidal powers. During the war he was in charge of a mobile laboratory, and gave special attention to the outbreaks of dysentery which occurred from time to time, and to the treatment of the disease by intestinal antiseptics. The outcome of this work was the introduction to the medical profession in 1922 of the benzene derivative which he christened dimol. He gained a commission with the rank of Captain in the war, and was one of the few non-medical members of the Royal Society of Medicine.

North Staffordshire Royal Infirmary.

Sir Harold Gillies recently opened two operating theatres at this institution, one of which, the joint gift of Mrs. Montford and Mr. Henry J. Johnson, is entirely new, while the other has been reconstructed. The need is indicated by the fact that last year there were 3512 operations upon in-patients, and a total of nearly 13,000 minor operations.

Arundel Hospital.

Sir William Bird, J.P., presiding at a meeting of the governors, announced the gift of £5000 from Miss K. Mitchell for the erection of a new hospital. An appeal has been launched for the raising of the balance required—£2000. The new institution is to be a cottage hospital on a pavilion plan, and will be erected on a site given by the Duke of Norfolk on the Arundel-Chichester road.

Royal Microscopical Society.

This Society, whose headquarters were in Hanover-square, London, for some 40 years, has now moved to the B.M.A. House, Tavistock-square, London, W.C. 1, where its library and slide collections will be more adequately housed, and where a portion of its unique collection of historical instruments will be on permanent exhibition. The ordinary meetings will be held as hitherto on the third Wednesday in each month from October to May inclusive in the Hastings Hall, and by the almost unanimous vote of the Fellows these meetings will be held at 5.30 P.M. instead of at 8 P.M. as formerly. Sectional meetings will be held in the Pillar Hall.

Reunion of the Romance Medical Press.

The second annual gathering of the Federation of the Presse Médicale Latine will be held at Brussels from Sept. 28th–30th, during the centenary commemoration of Belgian independence. The reunion will have the patronage of the Minister of Science and Art and will be presided over by Prof. Maurice Loeper and Dr. Albert Delcourt, presidents respectively of the French and Belgian associations. On the first day of meeting Prof. Emile Forgue, of Montpellier, will open a discussion on the Contemporary Medical Journal and Medical Journalist, the afternoon being given up to considerations of finance and transport. On the second day three interesting topics come up for discussion: (1) the rights of editors of periodicals, (2) the issue of a dictionary of medical terms, and (3) the rôle of the medical press in the diffusion of large scientific and professional ideas. On the third day the delegates will make a comprehensive tour including the Antwerp Exhibition. The general secretary of the congress is Dr. René Beckers, who may be addressed at 36, Rue Archimède, Brussels.

Enlargement of Carshalton Hospital.

The Carshalton, Wallington, and Beddington War Memorial Hospital has been enlarged by the addition of a women's ward of 14 beds, an isolation ward, two children's wards, and 15 private wards. The hospital now contains about 60 beds. A nurses' home is being given by Major Mallinson, at a cost of £5000.

Coombe Lying-in Hospital.

The clinical report of this Dublin hospital for 1929 makes the familiar remark that some of the deaths could have been prevented by efficient antenatal care; nevertheless the morbidity-rate was "reasonably low"—3·8 per cent. The attendance at the prenatal clinics is rapidly increasing, but the "emergencies" far outnumbered the booked cases.

Donations and Bequests.

Mrs. Mary Ann Major, West Cliffe-road, Bournemouth, widow of Herbert Coddington Major, M.D., left £1000 to the Royal Medical Benevolent Fund, £500 each to the West Riding Medical Charitable Society, the Royal Infirmary for the Blind, Frisinghall, the Distressed Gentlefolks' Aid Society, £200 to the Bedford County Hospital, £100 to the Home for Infirm and Aged Women (Jersey), and £100 each to the Jersey Female Orphan Home and the Jersey Society for the Blind.—Among other bequests the late Mr. Joseph Sawyer, of Kenley, Surrey, left £1000 to the Purley Cottage Hospital.

Royal Northern Group of Hospitals.

In addition to the Royal Northern Hospital at Holloway, this group comprises the Royal Chest Hospital, City-road, the Grovelands Hospital, New Southgate, and the Reckitt Convalescent Home at Southend-on-Sea. At the Royal Northern Hospital and its branches, 5752 new in-patients were treated, and the new out-patients numbered 54,196. The enlargement and reconstruction of the out-patients' department is a pressing need. At the Chest Hospital 604 in-patients were treated, and there were 34,579 out-patients' attendances. At the Grovelands Hospital 1315 patients were treated, and at the Reckitt Convalescent Home 637. Since the establishment of the Contributors' Certificate Fund, in 1921, it has collected over £38,000. The general debt of the hospital is now £97,331. The new private hospital for 65 paying patients will cost £57,000 of which £35,000 has been given, and £15,000 lent by Sir Howell J. Williams.

King Edward VII. Welsh National Memorial Association.

At the annual meeting of the Board of Governors held at Carmarthen the President, Mr. David Davies, said that there had been a net decrease of 61 in the number of deaths from tuberculosis in Wales and Monmouthshire, the decrease being most marked in Glamorgan, Monmouthshire, and Carnarvonshire. A high percentage of cases—roughly half—of those referred to the Association were found to be non-tuberculous. Increasing use was made, both in pulmonary and surgical cases, of the trained specialists and equipment provided by the Association. Prof. Lyle Cummins had expressed the view that, in the fight against tuberculosis, the most favourable field for further progress lay in the period of childhood and adolescence, and Dr. R. J. Matthews had confirmed the fact that the critical years in tuberculosis are those of adolescence. This conclusion emphasised even more strongly the importance of the educational campaign in elementary schools.

A Friendly Society Congress.

The ninety-fifth annual high court of the Ancient Order of Foresters, which brought some 800 delegates to Greenock last week, was addressed by Mr. W. Adamson, Secretary of State for Scotland, who said that he was watching the increasing expenditure on sickness and disablement claims with great anxiety. While legislation might be required to bring schemes of social insurance into a complete whole, yet even now much could be done, he thought, by whole-hearted coöperation between all engaged in the service. Mr. A. Marsden, in his address as High Chief Ranger, spoke with satisfaction of a surplus of £1,750,000 in the voluntary section and one of £2,750,000 on the State side. The position of panel doctors had, he said, been made more difficult by the reduction in the interval necessary for removal from one panel to another, and he believed the present procedure placed an undue strain upon the conscientious doctor. Mr. Marsden mentioned two features which in his opinion had won for the insurance principle the confidence of the insured population: (1) freedom to manage their own health insurance affairs by themselves or their representatives, and (2) in the case of friendly societies, liberty to deal with their own brethren in times of sickness and need. The court rejected the proposal that surpluses should be pooled and refused to urge the Minister of Health to make ophthalmic and dental treatment statutory benefits.

Adult Orthopædic Patients.

Adult patients are now being admitted to the Derbyshire County Council's Orthopædic Hospital at Bretby, which has hitherto been used for children only. A single-storey building has been added containing 32 beds, divided equally between men and women. The hospital will continue to specialise in cases of surgical tuberculosis.

Central Hospital for Durham.

The Durham county council has approved a scheme for the erection of a central hospital to serve the whole of the administrative county. Two adjoining estates, extending to 62 acres, on the northern boundary of Durham City, are to be purchased at a cost of £22,000. It is officially stated that "practically all the old poor-law hospitals are inadequate and out of date."

Sussex Provident Scheme.

The list of amounts paid to local hospitals in connexion with this scheme for services rendered to subscribers during the first six months of this year marks a total of £7410 2*s.* 9*d.*, or £1361 17*s.* 7*d.* more than for the corresponding half-year of 1929. The Royal Sussex County Hospital received £2092; Royal Alexandra Hospital for Sick Children, £873; New Sussex Hospital for Women and Children, £709; Hayward's Heath Hospital, £457; Hove Hospital, £404; Sussex Maternity and Women's Hospital, £307; Sussex Eye Hospital, £201. Among other payments made to coöperating institutions and agencies was the sum of £276 to the Brighton Corporation. The Queen's Nurses are in the list for the first time.

Fellowship of Medicine and Post-Graduate Medical Association.

There are two weeks remaining of the special course arranged by the Fellowship of Medicine at the All Saints' Hospital in Genito-Urinary Diseases. Instruction consists of clinical cystoscopic demonstrations on men and women. From Sept. 1st to Sept. 13th the staff at the Queen's Hospital, Hackney, will provide an all-day course in diseases of children, where a variety of cases will be shown. The annual revision course at the Westminster Hospital will be held from Sept. 15th to Sept. 27th. Teaching will be given in all departments of the hospital. Courses arranged for October include those on diseases of the throat, nose and ear, diseases of children, gynæcology, tropical medicine, orthopædics, and a general course (revision), also evening courses for the M.R.C.P. and the Final F.R.C.S. examinations. Post-graduates are invited to apply to the Fellowship of Medicine, 1, Wimpole-street, London, W. 1., for particulars of the winter programme, the list of 1931 special courses, and the "general course" provided by the associated hospitals.

School Hygiene in Ireland.

At the Trade Union Congress held in Sligo recently a lively discussion took place on the condition of the primary schools as affecting the health of the children. Mr. Frisby, of the National Teachers' Organisation, proposed a resolution calling on the Government to make a radical improvement in the conditions of the school buildings, and to provide for their sanitation and upkeep. He said that in every county one could see schools which were ill-built and insanitary, a menace to the health of both children and teachers. There could be no effective education in such schools. Senator Cummins drew attention to the fact that the School Meals Act only applied to urban areas, and said that in country districts children who came long distances often had to go hungry all day. The listlessness due to long fasts made it difficult for such children to learn. It is not easy to understand why the School Meals Act is limited to urban areas, as the need for it is quite as great in the country. One of the unanimous recommendations of the committee of inquiry on health services was that the Act should be made applicable in rural as well as urban areas.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, August 18th, to SATURDAY, August 23rd.—ALL SAINTS' HOSPITAL, Vauxhall Bridge-road, S.W. Afternoon and Evening Course of Clinical and Cystoscopic Demonstrations (Male and Female). Two weeks. Further particulars from the Fellowship of Medicine.

Appointments

BRUCE, C. D., M.B., Ch.B. Edin., has been appointed Medical Officer of Perth Prison and Medical Superintendent of the Criminal Lunatic Dept. State Institution for Defectives.

RUSSELL, BEDFORD, B.Chir. Camb., F.R.C.S. Eng., Surgeon in Charge of the Throat Dept., St. Bartholomew's Hospital.

WALKER, G. F., M.D., Ch.B. Leeds, Hon. Physician, Royal Infirmary, Sunderland.

WATSON, R., B.Chir., Camb., L.R.C.P. Lond., M.R.C.S., D.P.H., Assistant Medical Officer and Assistant School Medical Officer, Doncaster.

Vacancies

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—Asst. H.S. At rate of £120.
Bedford County Hospital.—Asst. H.S. £130.
Birkenhead County Borough Infirmary, Tranmere.—Res. Asst. M.O. £350.
Birkenhead General Hospital.—H.P. Also Cas. O. Each at rate of £100.
Birmingham, City of, P.H. Dept., Tuber. Section.—Asst. M.O. £350.
Birmingham, Highbury Hospital, Moseley.—Res. Asst. M.O. £300.
Birmingham, Midland Hospital, Easy Row.—H.S. £200.
Birmingham, Queen's Hospital, Medical School.—Med. Reg. £200.
Blackburn Royal Infirmary.—3rd and 4th H.S.'s. £175 and £150 respectively.
Bradford City, Municipal General Hospital, St. Luke's.—H.P.'s and H.S's. Each at rate of £200.
Carlisle, Cumberland Infirmary.—2nd H.S. Also H.S. to Special Depts. Each at rate of £155.
Cheshire County Council.—Deputy County M.O.H. £1000.
Chesterfield and North Derbyshire Royal Hospital.—H.S. At rate of £100–£175.
Chester Royal Infirmary.—H.P. and H.S. Each £150.
Colchester, Essex County Hospital.—Asst. H.S. and Reg. £120.
Connaught Hospital, Orford Rd., Walthamstow, E.—Sen. Res. H.S. At rate of £150.
Coventry and Warwickshire Hospital.—Res. H.P. Also Res. Cas. O. £160 and £125 respectively.
Croydon County Borough, Public Assistance Dept.—Res. Asst. M.O. for Mayday-road Hospital. £300.
Denbigh, North Wales Sanatorium, Llangwyfan.—3rd Asst. Res. M.O. £250.
Derby, Derbyshire Royal Infirmary.—Ophth. H.S. £150.
Dewsbury, New Dewsbury and District General Infirmary.—Jun. H.S. £150.
Dorchester, Dorset County Hospital.—H.S. £160.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £160.
Dumfries and Galloway Joint Sanatorium Board.—Asst. Med. Supt. £300.
Durham County Council.—Asst. Welfare M.O. £500.
Edinburgh, Jordanburn Nerve Hospital, Morningside Park.—Asst. Phys. £400.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120.
General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.
Gloucester County and City Mental Hospitals.—Jun. Asst. M.O. £350.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.P. At rate of £150.
Great Yarmouth General Hospital.—Sen. and Jun. H.S.'s. £150 and £140 respectively.
Guy's Hospital, Dental School, London Bridge, S.E.—Teacher of Conservative Dental Surgery. £1000.
Halifax Royal Infirmary.—3rd H.S. £125.
Hertford County Hospital.—H.P. At rate of £150.
Ilford, King George Hospital.—Res. M.O. £200.
Infants Hospital, Vincent-square, Westminster.—Two H.P.'s. Each at rate of £75.
Inverness, Northern Infirmary.—H.P. and Jun. H.S. £100.
Leicester Royal Infirmary.—H.S.'s and Cas. O. Each £125.
Liverpool Eye and Ear Infirmary, Myrtle-street.—Hon. Asst. S. to Ear, Nose, and Throat Dept.
Liverpool Open Air Hospital for Children, Leasowe.—Jun. Res. M.O. £200.
Liverpool, Public Assistance Committee.—District M.O.'s. Each at rate of £250.
Liverpool, Walton Hospital, Mill-road Infirmary, Smithdown-road Institution, and Alder Hey Children's Hospital.—Res. Asst. M.O.'s. Each £200.
Leeds Jewish Herzl-Moser Hospital.—Res. M.O. £100.
London, County of.—Coroner. £1700.
London Female Lock Hospital, 283, Harrow-road, W.—H.S. £150.
London Hospital, E.—Surgical 1st Asst. and Registrar. Also Medical 1st Asst. and Registrar. Each £300.
London Lock Hospital, 91, Dean-street, W.—H.S. At rate of £200. Also Two Surg. Regs. Each £100.
Manchester Joint Committee on Cancer Research.—Asst. in Cancer Research Laboratories. £400–£650.
Manchester Royal Eye Hospital.—Jun. H.S. £120.
Merthyr General Hospital.—Res. H.S. At rate of £150.
Middlesex Hospital, W.—Medical Men interested in Radium Treatment of Malignant Disease.
Miller General Hospital, Greenwich-road, S.E.—Cas. O. £150.
Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. Asst. Surgeon.
Newcastle-upon-Tyne, Royal Victoria Infirmary, Pathological Dept.—Bio-chemist. £450.
Oldham Royal Infirmary.—Two H.S.'s to Special Departments. Each at rate of £175.
Preston and County of Lancaster Royal Infirmary.—Two H.S.'s. Each at rate of £150.
Rochdale Infirmary and Dispensary.—Jun. H.S. £175.
Royal Air Force Medical Service.—M.O.'s.
Royal College of Physicians.—Milroy Lecturer.
St. John's Hospital, Lewisham, S.E.—Res. Cas. O. At rate of £100.
St. Pancras Metropolitan Borough.—Asst. M.O. £500.
Salford, Hope Hospital.—Res. Surg. O. £400.
Sheffield Royal Hospital.—Res. Anæsthetist. At rate of £80.
Shrewsbury, Royal Salop Infirmary.—Res. H.S. At rate of £160.
Southampton, Royal South Hants and Southampton Hospital.—Two Asst. H.S.'s. Each at rate of £180.
South Shields, Ingham Infirmary.—Jun. H.S. £150.
Stafford, Staffordshire General Infirmary.—H.S. and H.P. At rate of £200 and £150 respectively.
Swansea County Borough, Infectious Diseases Hospital.—Res. M.O. £350.
Taunton and Somerset Hospital.—H.P. £100.
Ventnor, Royal National Hospital for Consumption, &c.—Asst. Res. M.O. At rate of £300.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.S. At rate of £100.
Walsall Manor Hospital.—Res. Asst. M.O.'s. £200 and £150 respectively.
Warwick County Mental Hospital, Hatton.—Jun. Asst. M.O. £350.
West London Hospital, Hammersmith-road, W.—H.P., Two H.S.'s., and Res. Anæsthetist. Each at rate of £100.
Wolverhampton Royal Hospital.—Cas. O. and Res. Anæsthetist. At rate of £125.

Births, Marriages, and Deaths

BIRTHS.

CHARTERS.—On May 9th, at Namirembi, Uganda, the wife of A. D. Charters, M.B., B.Ch., of a son.

CORY.—On August 7th, at Guildhall-street, Bury St. Edmunds, the wife of Dr. J. W. E. Cory, of a son.

DOWELL.—On August 2nd, at the Royal Infirmary, Derby, the wife of W. H. Dowell, M.R.C.S., L.R.C.P., of Castle Donington, of a son.

DURRANS.—On August 5th, at Cornelia Hospital, Poole, Dorset, to Margaret Durrans, wife of S. F. Durrans, M.R.C.S., L.R.C.P.—a son.

FITZSIMONS.—At "Tattysallagh," Caerleon, Mon., to Sheila, wife of Dr. J. O'C. Fitzsimons, of Naas, Co. Kildare—a daughter.

MILLS.—On August 10th, the wife of James Denholm Mills, B.M., B.Ch., of Shortlands, Seaford, Sussex, of a son.

THOMSON.—On August 2nd, at Woodland House, Penrith, the wife of Douglas D. C. Thomson, M.R.C.S., L.R.C.P., of a daughter.

MARRIAGES.

GILLESPIE—HOWARD.—On August 9th, at St. Columba's (Church of Scotland), Pont-street, S.W., R. D. Gillespie, M.D., M.R.C.P., to Audrey Margaret Mary, elder daughter of the late C. R. Howard, M.D., O.B.E. (Milit.), Frome, Somerset, and Mrs. Philip F. Howley, London.

DEATHS.

BRAUND.—On August 3rd, Arthur Mather Braund, M.R.C.S., L.R.C.P., of Hillside, Stratton, North Cornwall.

BROOK.—On August 10th, at Pottergate, Lincoln, Lieut.-Colonel Charles Brook, F.R.C.S., R.A.M.C. (T.) (retired), in his 92nd year.

LLOYD.—On August 6th, Frederick George Lloyd, M.R.C.S. Eng., L.R.C.P. Lond., of Oakwood-court, W., aged 65.

REES-THOMAS.—On August 9th, at Cross-street, Basingstoke, William Henry Rees-Thomas, M.D., M.R.C.S., L.R.C.P., aged 60.

THOMSON.—On August 8th, on R.M.M.V. *Alcantara* in South Atlantic, Emmeline Sibyl, wife of F. G. Thomson, M.A., M.D., F.R.C.P., of 28, Circus, Bath. Buried at sea, August 9th.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. I., 1930.

THE Index and Title-page to Vol. I., 1930, which was completed with the issue of June 28th, is now ready. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 7, Adam-street, Adelphi, W.C.2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

NOTES, COMMENTS, AND ABSTRACTS

THE AUSTRALIAN CANCER ORGANISATION.

By ARTHUR BURROWS, M.D., M.R.C.P., D.M.R.E.,
RADIUM AND CANCER ADVISOR TO THE COMMONWEALTH GOVERNMENT.

(*Concluded from p. 331.*)

A GENERAL CONFERENCE.

In the beginning of April, 1930, the first annual conference of the cancer organisations in Australia was held at Canberra. This conference, which was well attended and enthusiastic, discussed such subjects as the progress made in the cancer campaigns in the various States, the organisation of the treatment of cancer by special physical and chemical methods and the results obtained thereby, possible avenues of research in respect of cancer, the evaluation of the various methods of treatment of cancer, and the organisation of the national resources against cancer. It was called by the Minister for Health and an official report of its deliberations will appear in due course.

It was the misstatement of some of the facts and figures brought forward at this conference which led to certain erroneous paragraphs in respect of the cure of cancer in Australia being inserted in the Australian and English lay press. The statements as they appeared in the daily press were given a somewhat sensational turn and were not actually in accord with the reports officially presented and discussed at the conference.

RESULTS OF TREATMENT.

The general position is as follows. Until the end of 1929 (a period which, allowing for different dates of starting, averages out at roughly a year of activity for the whole of the Australian centres) over 3000 cases were treated at the newly constituted cancer centres, of which approximately 2500 were treated by radium. One of the hospitals in Australia which became a radium centre already possessed equipment with deep X ray apparatus, and one or two others at the date of the conference were still waiting for delivery. So that, in the case of Melbourne, the numbers of patients treated at the cancer centre did not include those who were treated by deep X rays alone, but the figures are available for the deep X ray cases treated at the Royal Prince Alfred Hospital, Sydney. The number of cases treated at each centre is roughly proportional to the population of each State and about 8 per cent. of the 2500 cases treated were not malignant.

It was not possible to analyse the results obtained from returns of cases treated right up to date, but the figures of the patients treated up to June 30th, 1929, were analysed by me. At the time that these figures were given it was stated definitely that the word "cure" could not be used, and that it was certain that a very considerable proportion of the cases quoted as "well" would recur in due course. The expression "well" that was used is substantially the same as the term "clinical cure" which is often used in America, and means that no symptoms or signs of the disease could be detected at the date on which the returns of the case sheets were made. The analysis of the patients treated by radium was presented simply with the object of giving some idea of how the work was progressing up to date, and represents merely the early work done at the cancer centres, with the exception of Adelaide, which started late.

It has not been possible to produce all at once groups of experienced radium therapists everywhere in Australia, even though a full post-graduate course has been given at the Sydney University, and a considerable amount of individual instruction at the various State centres and sub-centres. When the work which is set forth in the following table was carried out, some of the medical men were just emerging from the student stage of radium work.

General Figures.

Malignant disease.	Total.	No information, not improved, or died.	Improved.	Well at date.	Prophylaxis.
Carcinoma cervix uteri ..	85	38	26	21	—
,, vagina ..	10	4	3	3	—
,, corpus uteri..	3	2	1	0	—
,, skin	98	31	25	42	—
,, lip	46	10	9	26	1
,, tongue ..	40	23	12	5	—
,, buccal cavity.	59	36	15	8	—
,, pharynx ..	5	4	0	1	—
,, larynx ..	16	11	3	2	—
,, bladder ..	8	5	3	0	—
,, prostate ..	6	5	1	0	—
,, rectum ..	14	8	4	2	—
,, breast ..	20	6	11	2	1
,, glands* ..	25	15	9	1	—
,, various ..	8	4	2	2	—
Sarcoma	34	21	8	5	—
Malignant disease, various	6	1	2	3	—
	483	224	134	123	2
Rodent ulcer	245	22	36	187	—
Benign conditions ..	118	5	35	78	—
Grand total ..	846	251	205	388	2

* These glands are chiefly advanced secondary glands occurring after the primary growth had been removed by surgery at some earlier date.

The work is steadily improving and is better at the present time than it was at the period which this table covers. It, however, still leaves something to be desired and efforts are being made in all directions to ensure improvement.

COMMENT ON THE RESULTS.

The results in the treatment of carcinoma of the tongue and buccal cavity are disappointing, but it has not been possible to indicate the considerable number of cases in which the primary growth disappeared under radium treatment. The majority of the cases which did not improve were unsatisfactory owing to the development of secondary glands.

In Australia, as apparently in England, the idea of burying radium needles is the thing which has appealed most to the general medical imagination and it has been difficult, possibly because it needs more technical knowledge, to induce the centres to develop to the extent necessary the application of radium from the surface. Certainly our results from the treatment of secondary glands show quite well, when the case sheets are examined, that the burying of radium needles in secondary squamous-celled cancer glands in the neck is almost useless. Carcinoma of the skin also shows considerable scope for improvement, but it must be remembered that, in the first instance through the necessity of circumstances, many advanced cases were treated, as well as patients who had previously received radiation treatment which had rendered them radio-resistant.

The obligation of attempting to cure all cases in one treatment and with it the correlated duty of providing only the very best treatment for every cancer case in the first instance is steadily being taught and inculcated into the minds of the medical practitioners carrying on the radium work.

Carcinoma of the cervix shows 25 per cent. of immediate apparently perfect results. This relatively low figure probably arises from the fact that in a number of instances it has been difficult to restrain the inexperienced radiotherapist from changing

rapidly from one technique to another instead of carrying out one method thoroughly. Efforts are being made to straighten out this difficulty, and to give an example of what can be done even now; at Brisbane General Hospital, where a very considerable number of cases of carcinoma of the cervix were treated and one technique was almost constantly applied, 50 per cent. of the cases treated showed no signs or symptoms of the disease after nine or more months—that is, up till April, 1930.

The total number of cases which showed no signs or symptoms of malignant disease nine or slightly more months after radium treatment, excluding rodent ulcer, was 123. This represents nearly one-quarter of the patients treated. How many of these cases will remain permanently well time alone will show, but it is certain that a proportion of them will live on without recurrence.

Deep X ray treatment has also given some very gratifying results, which is all the more pleasing looking to the fact that this work was started and carried on in Australia despite a considerable despondency and often opposition.

An attempt is being made to have microscopic examination made of every tumour examined. Owing to deficient facilities in one or two centres this has not been done as completely as desired, but within a month or two it will be possible for every centre to examine every case histologically. So far half the cases have had microscopic examinations made although, as has above been indicated, this is not as high a proportion as will shortly be possible. But what can be done in this matter has again been shown at Brisbane General Hospital where, in 99 out of a group of 119 cases of serious cancer treated, sections for pathological examination were prepared and reported upon.

The question of the follow-up of cases after treatment is giving some little difficulty in certain quarters, but the number of cases so far that have been missing is comparatively small. Again in this respect Brisbane sets an example, as in the case records for that centre against the names of only two patients was it found necessary to insert the statement "no information obtained."

THE FUTURE.

So far it can certainly be said that the Australian experiment in cancer treatment and organisation has been fully justified, and a very large number of people who would not otherwise have obtained it have been completely or partially relieved of the symptoms or signs of cancer, and it is generally felt that this work has been all to the good with a definite promise of steady progress in the future. In all centres the predominant feeling is one of hopefulness and confidence. There now remains the necessity for maintaining and improving the standard of cancer treatment throughout Australia by the control and improvement of old techniques together with the introduction of new ones. It is also necessary that this great national experiment should be maintained as a unity and that the whole organisation should be kept on its present basis, by which means uniformity of methods of treatment, of recording cases, and of following-up results will be maintained and any new methods, both from home and abroad, brought rapidly to the notice of the various centres.

The organisation that has been laid down is the nucleus of a great scheme and represents an attempt to deal with the cancer problem on modern lines by methods which bring to bear on the question both national and local powers of organisation and initiative.

EXTENSIONS AT PAPWORTH SETTLEMENT.—Prince George has opened the large new cabinet-making shop, the foundation-stone of which was laid a year ago by the Duke of York, at Papworth Village Colony. His Royal Highness commented upon what he described as the "extraordinary fact" that not a single child of the married tuberculous members of the colony has suffered from tuberculosis.

THE NATURE OF MILTON'S BLINDNESS.

THE conjectural diagnosis of the cause of Milton's blindness is an interesting exercise to which an article is devoted by Mr. Arnold Sorsby in the July number of the *British Journal of Ophthalmology*. The known facts are briefly as follows. In the first place we know that the blindness was not due to any externally visible affection. In the sonnet addressed to his friend Cyriak Skinner, Milton says:

> "Cyriak, this three years' day these eyes though clear
> To outward view, of blemish or of spot,
> Bereft of light, their seeing have forgot."

As a boy Milton was so studious that from the age of 12 he scarcely ever went from his lessons to bed before midnight "which indeed was the first cause of injury to my eyes, to whose natural weakness their were also added frequent headaches." Nevertheless in his early years he was skilled in using the sword, so that the defect of sight at that time could not have been very great. It was not until about the age of 35 that the trouble with his eyes became very serious, but even then he would not spare himself. He says:

> "When I was publicly solicited to write a reply to the defence of the royal cause; when I had to contend with the pressure of sickness and with the apprehension of soon losing the sight of my remaining eye; and when my medical attendants clearly announced that if I did engage in the work, it would be irreparably lost—their premonition caused no hesitation and inspired no dismay."

In describing the onset of his blindness in a letter intended to be shown to Dr. Thevenot, a Parisian oculist of great repute, he says, writing in 1654, when he had been blind for about three years:

> "It is ten years, I think, more or less since I felt my sight getting weak and dull, and at the same time my viscera generally out of sorts. In the morning if I began as usual to read anything, I felt my eyes at once thoroughly pained, and shrinking from the act of reading, but refreshed after moderate bodily exercise. If I looked at a lit candle a kind of iris seemed to snatch it from me. Not very long after a darkness coming over the left part of my left eye (for that eye became clouded some years before the other), removed from my vision all objects situated on that side. Objects in front also, if I chanced to close the right eye, seemed smaller. The other eye also failing perceptibly and gradually through a period of three years, I observed some months before my sight was wholly gone, that objects I looked at without myself moving, seemed all to swim, now to the right, now to the left."

From this passage, and especially from the mention of a "kind of iris" when he looked at a candle, some writers have argued that Milton's disease was chronic glaucoma. As Mr. Sorsby points out, however, it is a large assumption that the expression "kind of iris" alludes to the rainbow colours round lights which are sometimes seen in glaucoma, and the age of onset—the early thirties—as well as the nature of the field defect, occurring suddenly, and temporal, not nasal, in position—are distinctly against that diagnosis.

On the other hand, there is good reason to believe that Milton suffered from progressive myopia. The early trouble with his eyes brought on by excessive study points to this. Later, the sudden loss of the temporal field in his left eye suggests very strongly a detachment of the retina in that eye. It was three years after the loss of sight in the left eye that the right one appears to have followed suit. Its gradual failure and Milton's own description of the swimming about of objects, culminating in complete blindness save for perception of light, suggests a progressive myopia leading to a retinal detachment. This presumption is strengthened by the knowledge that Milton in his youth had trouble with his eyes connected with overwork. We may presume that he was born with an hereditary tendency to myopia (his father, we are told, read without spectacles at the age of 84); that his studious life favoured the development of the myopia and of the choroido-retinal degeneration that so often attends it; that the sudden failure of vision in the left eye was due to retinal detachment; and that the gradual failure of the right, though it

may have been due solely to retinal degeneration, was very probably completed by a second detachment. The theory of detachment was first mooted by Dr. Dufour, of Lausanne, in 1909. Mr. Sorsby discusses other theories, but we agree with him that this one is by far the most probable.

A MEMORIAL TO MARGARET MACDOWALL.

To the Editor of THE LANCET.

SIR,—It has been suggested by some of those who knew and admired Margaret Macdowall and her work for children of limited intelligence, that many might care to subscribe to a memorial. It is thought that such a memorial might take the form of a new edition of her book, "Simple Beginnings in the Training of Mentally Deficient Children." This book, which was first published in 1919, and is still in constant demand, has now been out of print for some time, and it is estimated that a new edition, with some biographical notes added, would cost approximately £100. If, as is hoped, the response to this appeal brings in a substantial sum, it is proposed to use the balance, and any proceeds from the sale of the book, to create a fund from which grants or loans could be made to help educated girls to train for work among mentally deficient children. Mr. Harold Moreland has kindly consented to act as treasurer of the fund, and will acknowledge any donations, large or small, sent to him at Cherrycroft, Gerrards Cross, Bucks. The fund will close on Oct. 31st.

We are, Sir, yours faithfully,

R. COCKBURN. BERTHA JAMES.
MAURICE CRAIG. E. F. PINSENT.
EVELYN FOX. A. F. TREDGOLD.

August 12th, 1930.

ULCERS OF THE SKIN.

THE first two papers in the July number of the *Archiv für Schiffs- und Tropen-Hygiene* describe unusual cases of ulcer of the skin. On p. 345 Dr. H. Ziemann and Dr. A. Waegener tell of a German planter in Portuguese East Africa, aged 28, who in April, 1927, fell into a ditch and grazed his right knee externally. In a fortnight the wound began to inflame. The local doctor treated him with two intravenous injections of neosalvarsan, and with caustic and permanganate, but ultimately he had to come home, and in June, 1928, came under care in hospital in Berlin. There were several ulcers on the outside of the knee, extending along the lower third of the thigh and the upper end of the leg, the edges of the ulcers were pigmented and rolled, many suppurating pockets were found, and the knee was flexed to an angle of 130°. Serial photographs reproduce the appearances (at first very discouraging) from time to time. All kinds of treatment were used, drugs, X rays, sunlight, autovaccines, antiserum, skin grafting, without avail, until on Sept. 26th, Dr. Ziemann found in scrapings, not from the floor but from the edge where there was no suppuration, leishmania parasites, when he ordered an intravenous injection of stibenyl 0·1 g. to be given. This very small dose caused a severe reaction—collapse and later albuminuria with casts. Four days later 0·01 g. stibenyl was given intramuscularly, and as tolerance increased the dose was raised to 0·3 g. The ulcers were dressed with philonin ointment (copper iod-ortho-oxychinolin-sulphate and silver sulphate, aa 0·1 g., boric acid and acridin, aa 1 g., balsam of peru, 10 g., irradiated cholesterol, 0·25 g., zinc ointment to 100 g.) an ointment said to be very useful for wounds that do not heal. The patient still had reaction from the stibenyl treatment, but his ulcers began to heal rapidly, and he was discharged from hospital on Nov. 2nd, and was later reported completely cured. The authors note that this is the first report of leishmania of the skin from East Africa. They suggest that the original wound was probably infected by a phlebotomus carrying the parasite. The monocytosis in the blood was never higher than 4 per cent. The history of this case shows the importance of seeking leishmania parasites at spots where there is no suppuration.

The other communication (p. 351) is by Dr. G. Garry, surgeon to a Jerusalem hospital, reporting on an epidemic of ulcers on and about the ankles, which occurred in Palestine in 1920. About 100 patients were seen by Dr. Garry, mostly poor people, who came from the coast and walked barefoot. Fusiform bacilli were often present, but could never be cultivated. The ulcer first appeared as a papule the size of a pea, red and tender. Next day there was effusion, occasionally pus, drying to a scab, under which an ulcer formed in two or three days, covered with what sometimes looked like a diphtheritic membrane. The ulcers were very painful at night. No lymphangitis was noticeable. They healed spontaneously in about two months. Dr. Garry tried many remedies, the most successful being lactic acid dusted into the lesion under a wet saline dressing. A single application only was needed in some cases. All the ulcers so treated healed within three weeks.

TONSILLECTOMY IN RHEUMATIC FEVER.

IN what they describe as a preliminary report Dr. William Robey and Dr. Maxwell Finland, of Boston,[1] "unhesitatingly offer tonsillectomy as a safe therapeutic measure" during the acute attack of rheumatic fever, and claim that in several cases "the results have been brilliant." Referring to the figures upon which this double claim is based, one finds that out of 50 cases operated upon during the acute attack no less than 13 (that is, over 25 per cent.) are admitted to have had a definite exacerbation of symptoms. The criteria selected for comparison with the results of ordinary medical treatment are the number of days of elevated temperature, the number of days of joint symptoms, and the duration of the patient's stay in hospital. From the tables presented few conclusions can be drawn; the average duration of joint symptoms is recorded as 40 days in operated and 36 in unoperated cases (which seems very high), while the temperature remained raised in the operated cases for an average of ten and in the unoperated cases of eight days. Thus even if the criteria are regarded as sufficient, they do not provide any basis for the main claims of the paper.

No attempt was made to follow up the cases after discharge from hospital, and apparently the view was taken that the operation may, at least in certain successful cases, be taken as a cure. But the chief characteristic of rheumatic fever is a sudden or, more often, insidious invasion of the heart and nervous system by the causative virus, so that a follow-up of cases over a long period can be the only means of estimating the results of any specific course of treatment. Robey and Finland recognise, indeed, that "an initial attack or a recurrence may take place after tonsillectomy," but even this does not give them pause in "unhesitatingly offering tonsillectomy."

[1] Arch. Internal Med., 1930, xlv., 772.

ROASTING AN OX.—In aid of Loughborough Hospital, an ox has been roasted whole at Kegworth. It weighed 40 st., cost £20, and was roasted and eaten in the field in which it had grazed during its two years of life. The first slice, which was declared to be "well and truly cut," was sold for £4 10*s*.

LEEDS PUBLIC ASSISTANCE HOSPITALS.—The Leeds public assistance committee has given approval to a scheme for the appropriation of St. Mary's Infirmary, St. James's Hospital, and Rothwell Infirmary for the use of the sick of the city, whether poor or not. St. James's Hospital, which of late years has been used by the guardians as a general hospital, is to be adapted for the treatment of the acutely sick.